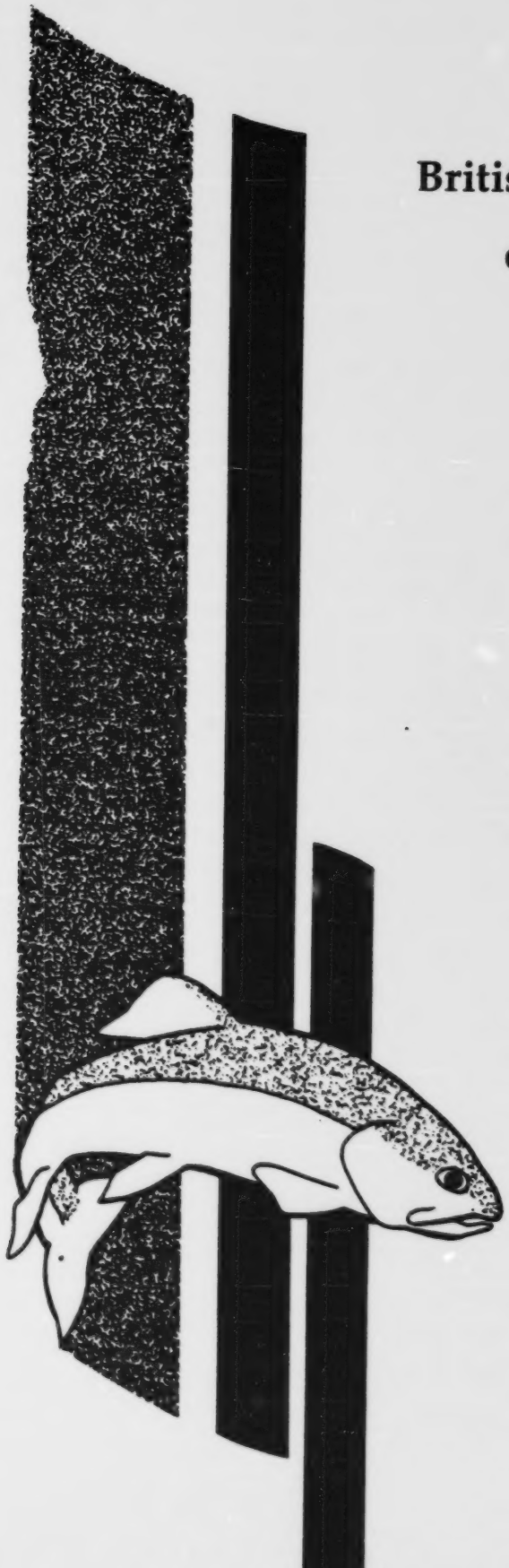

British Columbia Freshwater Results of the 1985 National Survey of Sport Fishing

by

MICHAEL STONE

FISHERIES TECHNICAL CIRCULAR No. 79

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by

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ABSTRACT

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The British Columbia freshwater portion of the 1985 National Survey of Sport Fishing in Canada was a cooperative effort of the provincial Ministry of Environment and Park's Recreational Fisheries Branch and the federal Department of Fisheries and Oceans. The survey was conducted by mail using a 2.4% random sample of 1985 freshwater angling licence holders. The survey revealed that of tne 360,139 licence holders, 87.3% or 314,262 anglers were active during 1985. Of tne active anglers, 77% were B.C.'s residents and 23% were nonresidents. The 71,561 active nonresident anglers were almost equally divided between nonresident Canadians and nonresident aliens.

It is estimated tnat anglers fished a total of 4,754,000 days during 1985. Resident anglers accounted for 90% of this activity, with non-residents providing the remaining 10%. On average, a resident angler spent 17.6 days fishing, while a nonresident spent 6.6 days. Anglers spent 70.5% of their angler days fishing on lakes and only 29.5% on rivers and streams.

Total angler catch during 1985 was 9,395,500 fish of which they retained 62% or 5,815,400 fish. Rainbow trout accounted for 58% of total catch, followed by kokanee with 14%, and cutthroat trout with 9%. All other species taken together accounted for less than 19% of total catch. On average, anglers caught 1.98 fish per angler day although nonresidents were more successful (2.76 fish per day) than were residents (1.98 fish per day).

Angling remains a predominantly male activity, with men comprising 79% of active resident anglers and 83% of active non-resident anglers. Active resident anglers made up 10.7% of the general B.C. population over 15 years of age, and male resident anglers made up 17.3% of the male population. Within the province, tne male participation rate varied, reaching a high of 44% in the Cariboo region.

The trends in angling licence sales and activity showed strong growth throughout the decade of tne 70's, followed by a sharp drop in the first nalf of the 80's. However, the decline appears to have stopped during 1985, and a return to increasing levels of angling activity has begun. Additionally, there has been a snift in the proportion of nonresident anglers from nonresident aliens to nonresident Canadians. A major reason for this shift was tne large growth in the population of Alberta, whose citizens make up the bulk of nonresident Canadian anglers.

ACKNOWLEDGEMENT

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Michael Stone
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CHAPTER ONE
INTRODUCTION

1.1 PURPOSE AND OUTLINE OF THE REPORT

The purpose of this report is to present the results for freshwater sport fishing in British Columbia of the 1985 National Survey of Sport Fishing in Canada. The British Columbia freshwater portion of the national survey was a cooperative effort of the provincial Ministry of Environment and Parks' Recreational Fisheries Branch and the federal Department of Fisheries and Oceans. The 1985 survey is the third in a series of national surveys started in 1975 and conducted every five years since then.

The next section of this chapter describes the licencing requirements for participation in B.C.'s freshwater sport fishery. Section 1.3 provides a brief overview of the National Survey's design and implementation. Finally, Section 1.4 defines some of the commonly used terms in this report.

Chapter Two describes the size of the freshwater angler population and how much they fished during 1985. Included is a discussion of angler origins and destinations, plus the amount of fishing taking place in each of the province's nine regions. Also included is a discussion of average angling effort, the monthly distribution of fishing effort, juvenile angling activities and saltwater fishing by freshwater anglers.

Chapter Three provides estimates of the total catch and harvest of fish from B.C.'s freshwater during 1985. The catch and harvest are described by species, the region where the fish were caught and by angler origin. Variations in the success rates of anglers is included both by region of residence and region fished. The anglers' preferences as to species desirability is also included, as is a discussion of the disposition of the anglers' catch.

Chapter Four examines how important a set of eleven factors is to the enjoyment of the anglers' sport fishing. These factors include a range of environmental, life style and catch conditions which anglers were asked to rate as very important, important or not important to their enjoyment of a day of sport fishing. The relative weight anglers place on this set of factors may have important fisheries management implications.

Chapter Five describes some of the characteristics of resident and nonresident anglers. This includes their age and sex plus estimates of the amount of sport fishing done outside of B.C. In addition, information on resident anglers' previous fishing experience and on their wildlife-related activities is presented. For nonresident anglers, information on how they rated B.C.'s freshwater sport fishing, what they would have done if there had been no sport fishing in B.C. and other trip information is described.

Finally, Chapter Six examines trends in sportfishing activities in B.C. over the last two decades. The chapter compares information collected in the 1985 National Survey to that collected in the previous two National Surveys plus two other province-wide surveys. Trends in licence sales, active anglers, total angler days and total catch are examined. In

addition, changes in average participation rates and catch levels are described. Finally, the factors which may have caused the changes in the fishery are discussed.

Although the survey had several questions on the anglers' expenditures on sport fishing and on the values they derive from a day of sport fishing, the results are not contained in this report. Instead, the results are the subject of a companion report entitled "Economic Values and Impacts of Freshwater Sport Fishing in British Columbia". This report will provide estimates of gross angler expenditures and the net economic value of sport fishing plus estimates of employment and income generated in B.C. by the angler expenditures.

1.2 FRESHWATER SPORT FISHING LICENCE REQUIREMENTS

In order to participate in British Columbia's freshwater sport fishery, anyone 16 years of age or older must possess a valid basic angling licence, plus any applicable supplementary licences. The regulations governing the 1985/86 season are detailed in the British Columbia Sport Fishing Regulations Synopsis 1985/86 For Non-Tidal Waters, prepared by the then Ministry of Environment's Fisheries Branch. The angling licence fee schedule is given in Table 1-1. The table shows that anglers are divided into four licence categories: Residents (B.C. residents between the ages of 16 and 64), Resident Senior Citizens (B.C. residents 65 years of age or older and who are also Canadian citizens), Canadian Nonresidents (Canadians who live outside of B.C.), and Alien Nonresidents (Non-Canadians who live outside of B.C.). There are two types of basic licences: an annual licence which is valid for the entire fiscal year, and a short-term licence which is valid for only a six consecutive day period. There are, in addition, two types of supplementary licences both of which have the prerequisite that an annual basic licence be purchased. Anyone wishing to fish for steelhead, an anadromous rainbow trout, must possess a supplementary steelhead licence. Finally, some of the waters of B.C. which "provide angling of an exceptional quality" were designated as Special Waters. Alien nonresidents wishing to fish on Special Waters are required to purchase a supplementary Special Waters licence. Those waters designated as Special Waters in the 1985/86 season are listed in Table 1-2.

Although juveniles, persons under 16 years of age, do not require an angling licence, it is required that nonresident juveniles be accompanied while fishing by a licenced angler, either a resident or a nonresident. In addition, the catch of the nonresident juvenile must be included in the daily catch quota of the accompanying licenced angler. However, nonresident juveniles may, if they wish, purchase a licence of their own.

Included in all basic angling licence fees over $1 is a $3 surcharge used to provide revenue for the Habitat Conservation Fund. The fund was established to preserve and manage critical fish and wildlife habitats in British Columbia. A similar surcharge also exists on provincial hunting and trapping licences. During 1985/86, the surcharge on fishing licences generated $982,644 in revenue for the fund. A further $3,569,753 was generated by licence sales for general government revenue.

TABLE 1-1
B.C. FRESHWATER SPORT FISHING LICENCE FEES, 1985/86

LICENCE TYPE	LICENCE CATEGORY			
	RESIDENT (Age 16-64)	RESIDENT SENIOR CITIZEN*	CANADIAN NONRESIDENT	ALIEN NONRESIDENT
Basic				
Annual	$13	$1	$15	$23
Short Term (6 day)	$ 7	n.a.	$ 8	$12
Supplementary				
Steelhead	$ 6	$6	$15	$15
Special Waters	n.a.	n.a.	n.a.	$25

All basic angling licence fees over $1 include a $3 surcharge for the Habitat Conservation fund.

n.a. Not applicable.

* Must also be a Canadian Citizen.

Source: British Columbia Sport Fishery Regulations Synopsis 1985/86 for Non-Tidal Waters.

TABLE 1-2
DESIGNATED SPECIAL WATERS, 1985/86

REGION	WATER BODY
Vancouver Island	Gold River and tributaries
	Harris Creek and tributaries
	Heber River and tributaries
	San Juan River and tributaries
Thompson-Nicola	Fraser River from Lytton to the Thompson River
	Thompson River below Kamloops Lake
Cariboo	Atnarko River and tributaries
	Bella Coola River and tributaries
	Chilcotin River
	Chilko River
	Dean River below Kalone Creek
	Young Creek
Skeena	Babine River
	Bulkley River and tributaries
	Kispiox River and tributaries
	Morice River and tributaries
	Suskwa River and tributaries
	Sustut River and tributaries
	Telkwa River
	Zymoetz River
	Clore River

Source: British Columbia Sport Fishery Regulations Synopsis 1985/86 For Non-Tidal Waters.

1.3 THE SURVEY DESIGN

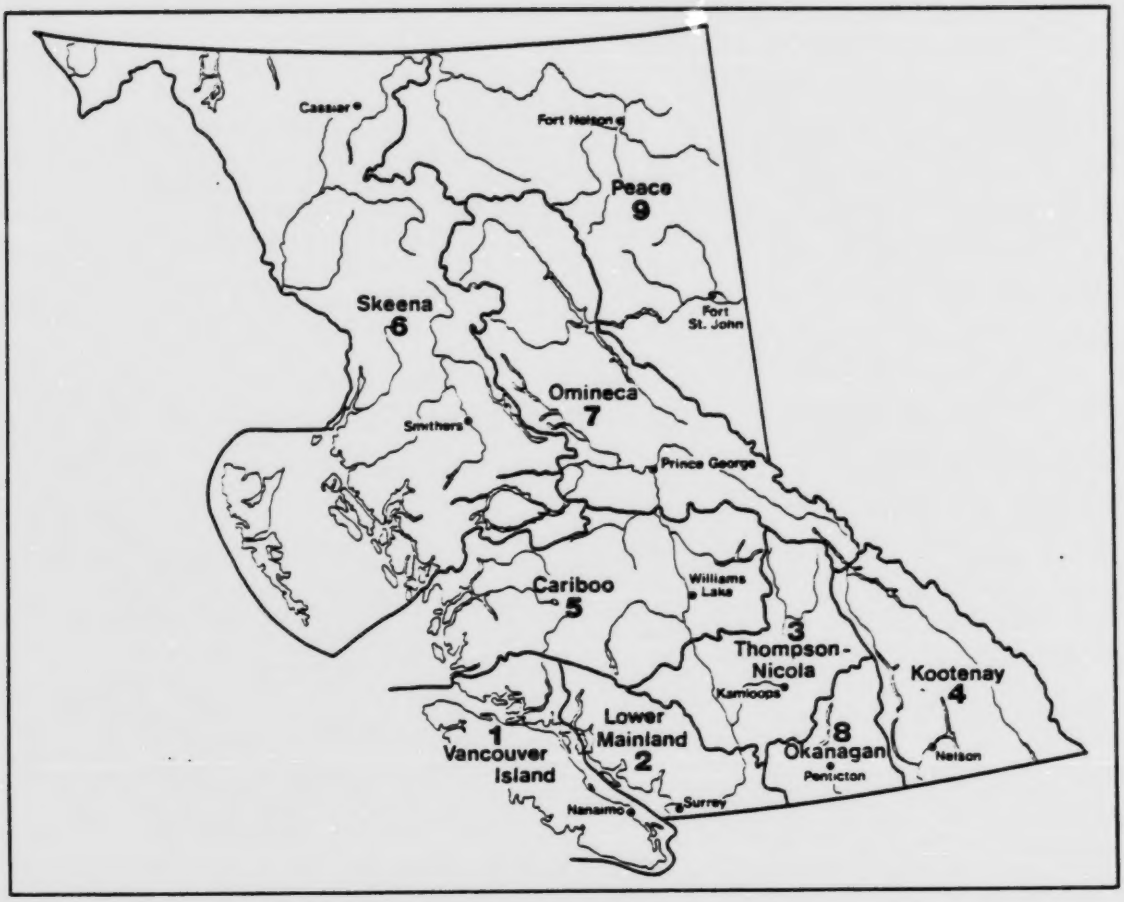
The information collected in British Columbia by the National Survey was done by a mail survey of people who purchased a basic angling licence during 1985. Separate questionnaires were developed for B.C. residents and nonresidents which are contained in Appendix B and C, respectively. Of the 360,139 basic angling licences sold, a random sample of 8,668 licences were drawn for a sampling rate of 2.4%. The sample of B.C. residential angling licence holders was stratified by the nine regions of residence shown in Figure 1-1. This stratification ensured that truly representative results could be obtained for the anglers living in each region.

In order to ensure a high response rate to the survey, three mailings were used. The first questionnaire was sent out to the entire sample during the week of January 22, 1986. A follow-up postcard, asking those people who had not already responded to please complete the questionnaire was sent out to the entire sample at the end of February, 1986. On March 19, 1986, a press release was issued asking for the public's support in completing and returning the questionnaire. Finally, a reminder questionnaire was sent out in mid-April, 1986 to those people on the sample who had not yet returned the questionnaire. As a result, a response rate of nearly sixty percent was achieved. Furtner details of the survey design and response rates are found in Appendix A.

1.4 TERMS USED IN THE REPORT

The terms angler and sport fisherman are used interchangeably throughout this report. A licenced angler refers to anyone who purchased a valid basic angling licence for British Columbia's fresh waters during 1985. An active angler refers to a licensed angler who fished in freshwater in B.C. during 1985. A juvenile angler refers to a person less than 16 years of age who fished in B.C.'s fresh waters during 1985. The measure of angling effort used in tnis report is the angler day, which is defined as all or part of any calendar day spent sport fishing in fresh water. An angler's catch refers to all fish landed from fresh water by the angler regardless of whether he retained the fish or released it. Harvest refers to that portion of catch which the angler retained.

Figure 1-1
ANGLING SURVEY REGIONS OF RESIDENCE, 1985



CHAPTER TWO
ANGLER POPULATIONS AND ANGLING EFFORT

2.1 ANGLER POPULATIONS, ORIGINS AND DESTINATIONS

During 1985 a total of 360,139 people purchased a basic freshwater licence in B.C. of which 314,262 or 87.3% actually fished. Table 2-1 gives the breakdown of licenced and active anglers by their region of residence. Of the active anglers over three quarters were B.C. residents, with the remainder being almost equally divided between Canadian nonresidents and alien nonresidents. Nonresident licenced anglers had a greater percentage of their number active during 1985. This is perhaps due in part to the higher licence fees paid by nonresidents which would tend to discourage people from buying a licence if they were not sure they would be able to use it at some time during the season. However, the reason for the variation in the percent active amongst resident areas in B.C. is not obvious, except perhaps for Vancouver Island residents whose proximity to a saltwater substitute could in part explain why they had the lowest percentage of active licenced anglers.

The origin of Canadian nonresident anglers by their province is given in Figure 2-1. Not surprisingly, Albertans comprised the bulk of Canadian nonresident anglers with 84.6% of the total. Anglers from Ontario and Saskatchewan accounted for nearly all of the rest. Few anglers were reported from Quebec or the Atlantic provinces, with no anglers at all reported from New Brunswick.

The distribution of licenced alien nonresident anglers by U.S. region is shown in Figure 2-2. Less than 2% of all alien anglers were not residents of the U.S.A. Of the U.S.A. residents the bulk came from the Pacific region with over half of the total coming from Washington State. Thus, two of our bordering jurisdictions - Alberta and Washington - account for over 68% of all nonresident anglers.

Table 2-2 shows where active anglers fished in British Columbia during 1985. It is important to note when using this table that any summation of anglers across the regions fished may lead to double counting of individual anglers because some anglers fish in more than one region. Fishing within their home region was the most important destination for residents as, except for the Lower Mainland region, over 80% of resident anglers fished within their home region. The Lower Mainland region's participation rate within the home region was much lower at 51%. The most popular regions amongst alien anglers were the Cariboo and Thompson-Nicola regions, while the Kootenay region was the most popular for Canadian nonresident anglers.

2.2 FRESHWATER ANGLER DAYS

It is estimated that all active licenced anglers spent close to five million days fishing for sport in British Columbia's fresh waters during 1985. The bulk of this effort, over four million angler days, naturally came from resident anglers with nonresident anglers supplying an additional half million angler days. The distribution of angling effort by region of residence and the region fished is detailed in Table 2-3, and Figures 2-3

TABLE 2-1

ESTIMATED LICENCED AND ACTIVE LICENCED ANGLERS BY REGION OF RESIDENCE, 1985

REGION OF RESIDENCE	LICENCED ANGLERS	ACTIVE LICENCED ANGLERS	PERCENT ACTIVE	PERCENT OF TOTAL ACTIVE ANGLERS
Vancouver Island	27,870	22,312	80.1	7.1
Lower Mainland	92,289	79,691	86.3	25.4
Thompson-Nicola	31,035	27,054	87.2	8.6
Kootenay	28,411	24,494	86.2	7.8
Cariboo	15,261	13,326	87.3	4.2
Skeena	17,650	14,784	83.8	4.7
Omineca	20,611	17,907	86.9	5.7
Okanagan	38,234	33,450	87.5	10.6
Peace	11,569	9,683	83.7	3.1
Total B.C.	282,939	242,701	85.8	77.2
Nonresident Can.	38,830	35,813	92.2	11.4
Nonresident Alien	38,370	35,748	93.2	11.4
Total Nonresident	77,200	71,561	92.7	22.8
GRAND TOTAL	360,139	314,262	87.3	100.0

Figure 2-1
ORIGIN OF CANADIAN NONRESIDENT ANGLERS, 1985
(% of 38,830 licenced anglers)

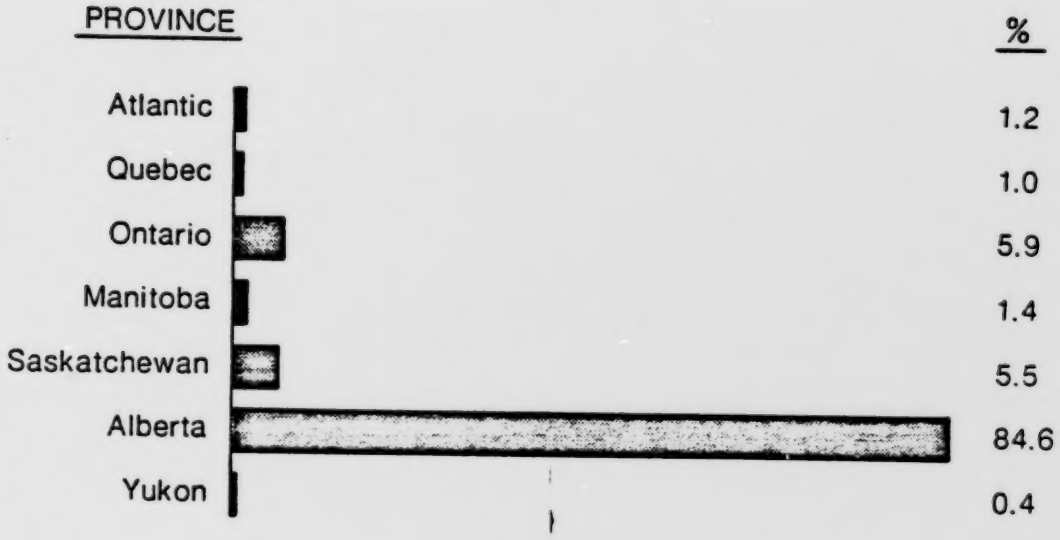
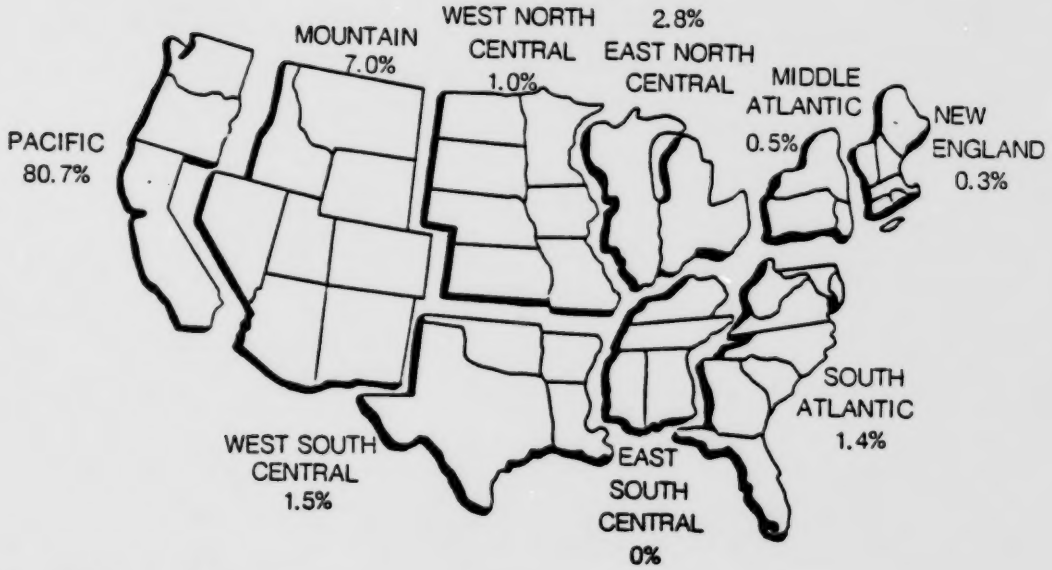


Figure 2-2
ORIGIN OF ALIEN NONRESIDENT ANGLERS, 1985
(% of 38,370 licenced anglers)



OTHER USA STATES 2.9%
OTHER COUNTRIES 1.8%

TABLE 2-2

ESTIMATED DISTRIBUTION OF WHERE LICENSED ANGLERS FISHED IN B.C. BY REGION OF RESIDENCE, 1985

REGION OF RESIDENCE	REGION FISHED								
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace
Vancouver Island	20,110	920	1,869	987	1,623	466	461	807	231
Lower Mainland	8,429	40,563	32,848	3,414	16,781	2,994	3,667	8,705	1,636
Thompson-Nicola	460	726	24,495	1,093	4,215	1,274	439	2,268	160
Kootenay	271	217	687	23,681	507	344	199	779	0
Cariboo	222	0	951	181	12,667	735	980	270	266
Skeena	108	108	163	162	217	14,028	1,244	54	163
Omineca	220	62	831	437	2,823	4,634	15,773	499	681
Okanagan	529	525	9,607	3,771	1,462	622	707	28,844	436
Peace	79	119	202	79	202	484	2,622	123	7,769
Total Residents	30,428	43,240	71,653	33,805	40,497	25,581	26,092	42,349	11,342
Canadian Nonres.	1,667	1,317	5,131	13,051	2,420	4,556	4,211	6,327	2,407
Alien Nonresidents	1,753	2,230	10,804	3,350	11,047	7,061	2,191	2,787	1,322
Total Nonresidents	3,420	3,547	15,935	16,401	13,467	11,617	6,402	9,114	3,729
Total All Anglers	33,848	46,787	87,588	50,206	53,964	37,198	32,494	51,463	15,071

TABLE 2-3

ESTIMATED TOTAL FRESHWATER FISHING DAYS, 1985

REGION OF RESIDENCE	REGION FISHED									
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace	B.C. Total
Vancouver Island	375,500	3,900	9,500	5,700	10,200	2,600	2,300	2,500	400	412,600
Lower Mainland	63,700	526,700	287,500	26,500	159,900	9,200	23,100	41,200	6,900	1,144,700
Thompson-Nicola	5,300	2,500	502,700	7,700	34,500	12,000	1,500	19,400	1,700	587,300
Kootenay	2,100	700	8,100	524,700	2,800	2,000	1,000	7,400	0	548,800
Cariboo	700	0	6,400	1,400	201,400	4,100	6,200	800	700	221,700
Skeena	300	900	800	2,300	900	313,800	8,100	700	1,200	329,000
Omineca	800	100	3,700	2,900	23,600	35,700	211,900	2,100	4,700	285,500
Okanagan	3,700	2,700	78,000	30,300	8,100	6,100	2,200	471,400	6,500	609,000
Peace	400	400	1,100	400	900	3,600	46,800	1,200	87,700	142,500
Total Residents	452,500	537,900	897,800	601,900	442,300	389,100	303,100	546,700	109,800	4,281,100
Canadian Nonres.	6,800	4,200	32,000	91,800	15,300	26,300	21,200	32,100	13,400	243,100
Alien Nonresidents	7,500	7,300	57,900	13,600	68,500	47,700	10,200	12,600	4,500	229,800
Total Nonresidents	14,300	11,500	89,900	105,400	83,800	74,000	31,400	44,700	17,900	472,900
Total All Anglers	466,800	549,400	987,700	707,300	526,100	463,100	334,500	591,400	127,700	4,754,000

Figure 2-3
DISTRIBUTION OF ANGLING EFFORT BY REGION FISHED, 1985
(% of 4,754,000 angler days)

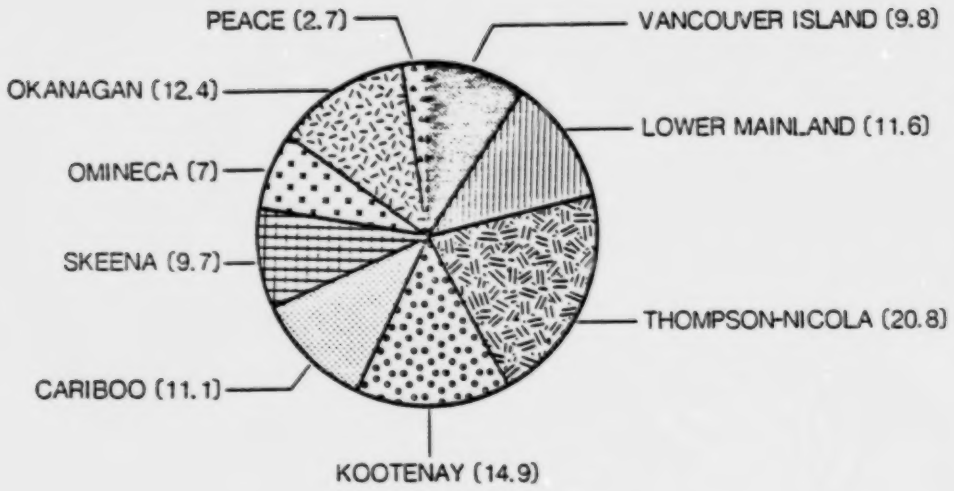
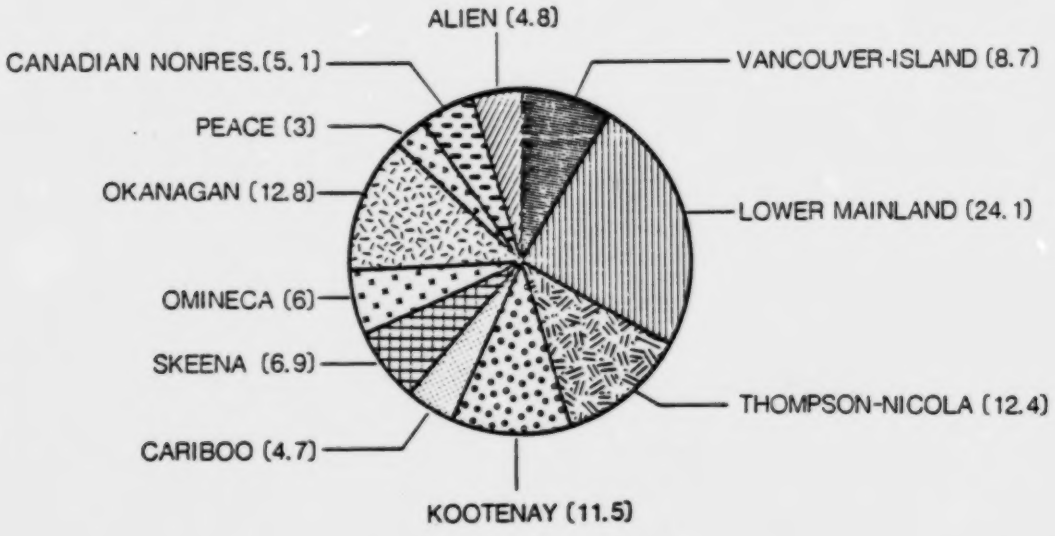


Figure 2-4
SOURCE OF ANGLING EFFORT BY REGION OF RESIDENCE, 1985
(% of 4,754,000 days)



and 2-4. The region of residence supplying the greatest number of angler days was the Lower Mainland followed by the Okanagan, Thompson-Nicola and the Kootenays. All nonresident anglers accounted for just under 10% of total angling effort. The region fished which received the greatest number of angler days was the Thompson-Nicola, followed by the Kootenay and the Okanagan. The majority of total angler days spent within most regions comes from the people living within that region. The only exception to this rule was the Cariboo region where residents accounted for only 38.3% of the region's total angling effort. Residents from the Lower Mainland accounted for 30% of the Cariboo's total, while alien anglers supplied a further 13%. Lower Mainland residents were also highly active in the Thompson-Nicola region accounting for over one-quarter of that region's total angler days.

2.3. ANGLING EFFORT ON LAKES AND RIVERS

The National Survey asked anglers to report separately how many angler days they spent fishing on lakes and on rivers and streams. The results are given in Table 2-4 for rivers and streams, and in Table 2-5 for lakes. Over 70.5% of total angling effort was on lakes, while rivers and streams accounted for 29.5% of the total. The Lower Mainland was the region fished with the most angler days on rivers, while the Thompson-Nicola had the largest number of angler days on lakes. Figure 2-5 graphs total angler days on lakes as a percentage of total angler days by the region fished. Only in the Lower Mainland and the Skeena regions did lake days account for less than half of the region's total angler days. This may be due to the absence of large lakes near major population centers in the two regions, whereas major river systems are quite close. Finally, Figure 2-6 breaks down total angling effort into three groups: angler days by anglers who fished only on lakes, angler days by anglers who fished only on rivers and angler days by anglers who fished on both rivers and lakes. Surprisingly, at least to the author, almost 60% total angling effort came from anglers who fished exclusively on lakes.

2.4 AVERAGE ANGLING EFFORT

Table 2-6 reports the average number of angler days per active angler by region of residence. Not surprisingly, B.C. residents spent, on average, almost three times as many days fishing as did their nonresident counterparts. Within B.C., residents of the Kootenay region had the highest average effort level, while residents of the Lower Mainland had the lowest. The second and third columns of the table detail the average number of days spent on rivers and on lakes. The only region of residence where anglers on average spent more time on rivers than on lakes was the Skeena region, whose resident anglers spent on average twice as much time on rivers than lakes. Thompson-Nicola residents spent on average the most time on lakes. Finally, nonresident anglers spent proportionally more time on lakes than did resident anglers.

While average effort values are very useful, they tell us nothing about the underlying range of effort amongst anglers. Table 2-7 and Figure 2-7 give the frequency distribution of reported angler days and the percent of total angler days accounted for by anglers in each of the angler day ranges. The distribution of resident anglers is skewed towards the high end of the range of angler days, while that of the nonresidents is skewed towards the

TABLE 2-4

ESTIMATED FRESHWATER FISHING DAYS ON RIVERS AND STREAMS, 1985

REGION OF RESIDENCE	REGION FISHED									
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace	B.C. Total
Vancouver Island	138,100	1,100	900	500	2,100	1,800	500	1,000	200	146,200
Lower Mainland	39,400	355,800	47,600	8,900	24,000	2,500	6,600	7,200	4,800	496,600
Thompson-Nicola	1,100	1,700	36,000	5,000	3,200	9,800	1,000	900	1,000	59,500
Kootenay	1,400	400	3,400	153,000	1,400	800	100	1,200	0	161,700
Cariboo	400	0	1,600	400	42,500	2,400	1,600	400	400	49,700
Skeena	300	900	0	0	500	211,600	800	0	0	214,100
Omineca	100	100	500	400	2,700	11,000	30,600	400	600	46,400
Okanagan	900	400	10,000	3,300	1,700	3,600	1,300	36,800	1,900	59,800
Peace	300	300	100	200	0	1,600	18,300	200	27,600	48,500
Total Residents	182,000	360,700	100,100	171,500	78,200	245,000	60,600	48,100	36,400	1,282,600
Canadian Nonres.	4,000	2,200	4,400	26,400	4,900	15,800	3,900	4,300	4,600	70,500
Alien Nonresidents	3,800	2,000	6,900	2,700	5,900	24,200	3,500	300	2,300	51,500
Total Nonresidents	7,800	4,200	11,300	29,100	10,800	40,000	7,400	4,600	6,900	122,000
Total All Anglers	189,700	364,900	111,500	200,600	89,000	284,900	68,000	52,700	43,300	1,404,600

TABLE 2-5

ESTIMATED FRESHWATER FISHING DAYS ON LAKES, 1985

REGION OF RESIDENCE	REGION FISHED									
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace	B.C. Total
Vancouver Island	237,400	2,800	8,600	5,200	8,100	800	1,800	1,600	200	266,400
Lower Mainland	24,200	171,000	240,000	17,600	135,900	6,800	16,500	34,000	2,100	648,000
Thompson-Nicola	4,300	900	466,700	2,800	31,300	2,200	500	18,500	700	527,800
Kootenay	700	300	4,700	371,600	1,400	1,200	900	6,200	0	387,100
Cariboo	300	0	4,700	1,000	158,900	1,700	4,600	500	300	172,000
Skeena	0	100	800	2,300	400	102,100	7,400	800	1,200	114,900
Omineca	700	0	3,200	2,500	20,900	24,700	181,400	1,600	4,100	239,000
Okanagan	2,800	2,300	68,000	27,000	6,400	2,500	900	434,600	4,700	549,200
Peace	200	0	1,000	300	900	2,100	28,500	1,000	60,100	94,000
Total Residents	270,600	177,300	797,700	430,300	364,100	144,100	242,400	498,600	73,400	2,998,400
Canadian Nonres.	2,800	2,100	27,600	65,400	10,400	10,500	17,300	27,800	8,800	172,500
Alien Nonresidents	3,800	5,300	51,000	10,800	62,600	23,500	6,800	12,200	2,200	178,400
Total Nonresidents	6,600	7,400	78,600	76,200	73,000	34,000	24,100	40,000	11,000	350,900
Total All Anglers	277,200	184,700	876,300	506,500	437,100	178,100	266,500	538,600	84,300	3,349,300

Figure 2-5
ANGLER DAYS ON LAKES AS A PERCENTAGE OF
TOTAL ANGLER DAYS BY REGION FISHED, 1985

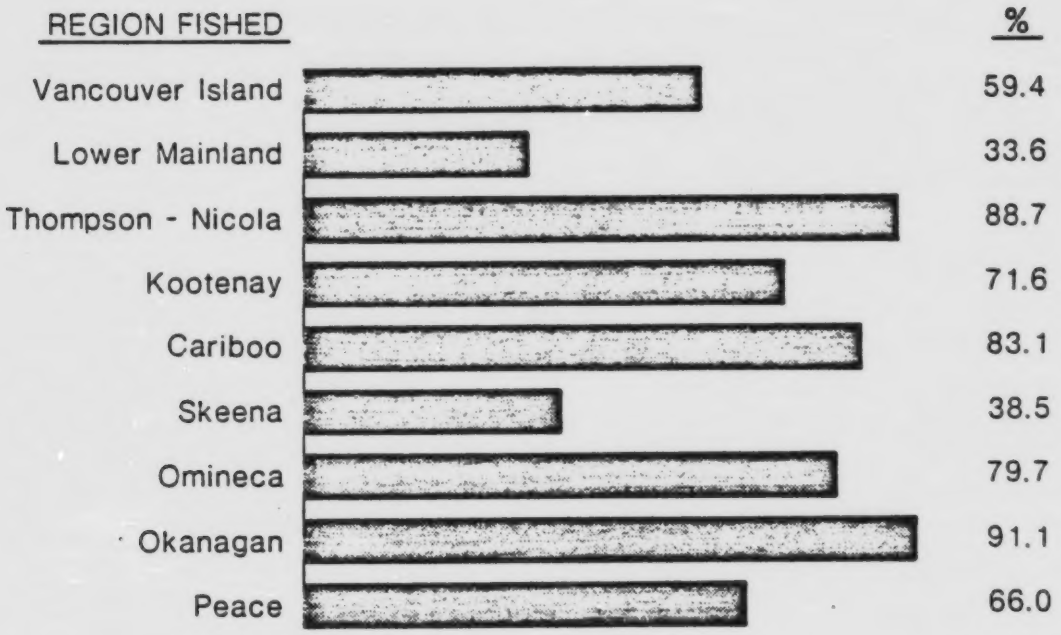


Figure 2-6
DISTRIBUTION OF ANGLING EFFORT TO LAKES AND RIVERS, 1985
(% of 4,754,000 angler days)

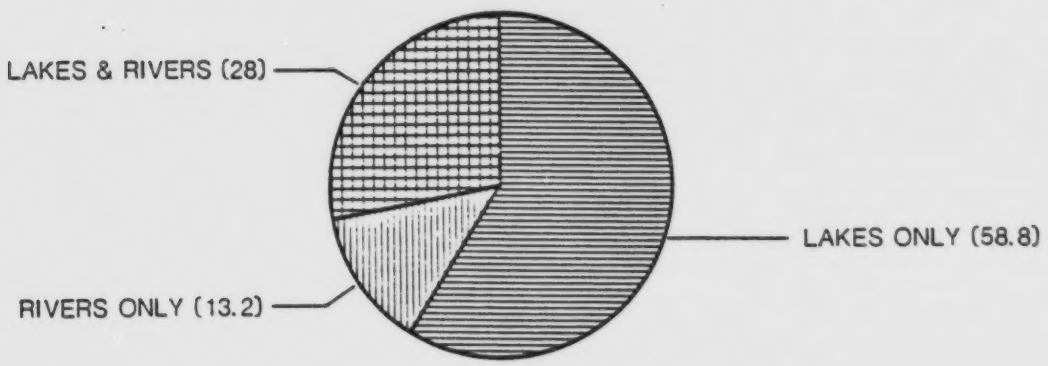


TABLE 2-6
AVERAGE ANGLING EFFORT BY REGION OF RESIDENCE, 1985*

REGION OF RESIDENCE	TOTAL ANGLER DAYS PER ANGLER	RIVER ANGLER DAYS PER ANGLER	LAKE ANGLER DAYS PER ANGLER
Vancouver Island	18.5	6.6	11.9
Lower Mainland	14.4	6.2	8.1
Thompson-Nicola	21.7	2.2	19.5
Kootenay	22.4	6.6	15.8
Cariboo	16.6	3.7	12.9
Skeena	22.3	14.5	7.8
Omineca	15.9	2.6	13.3
Okanagan	18.2	1.8	16.4
Peace	14.7	5.0	9.7
Total B.C.	17.6	5.3	12.4
Canadian Nonresidents	6.8	2.0	4.8
Alien Nonresidents	6.4	1.4	5.0
All Nonresidents	6.6	1.7	4.9
All Anglers	15.1	4.5	10.6

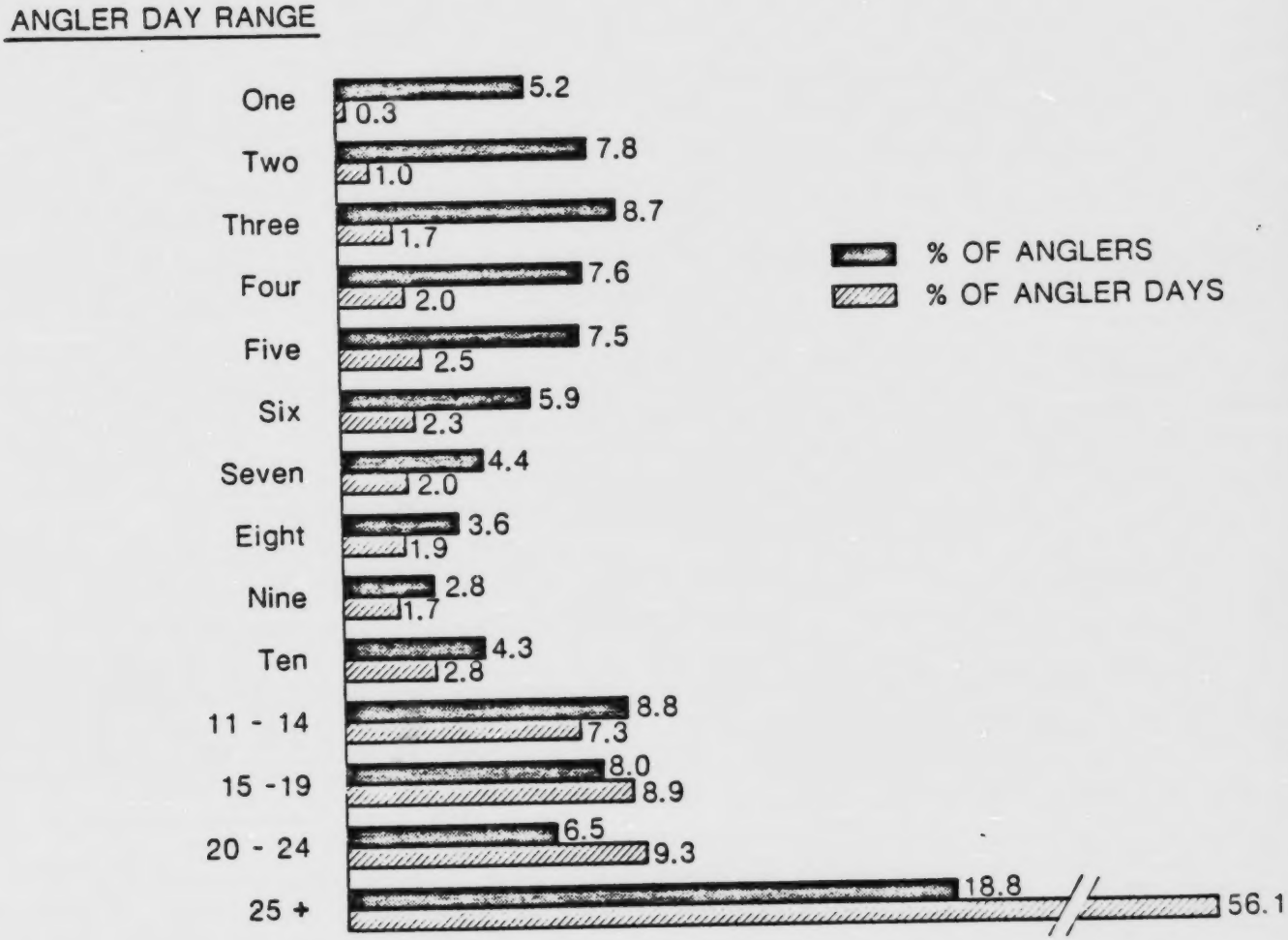
* Per Active Licensed Angler

TABLE 2-7

FREQUENCY DISTRIBUTION OF REPORTED ANGLER DAYS, 1985

RANGE OF EFFORT	RESIDENTS			NONRESIDENTS			ALL ANGLERS		
(Days)	Frequency (%)	Cumulative Frequency (%)	Percent of Angler Days (%)	Frequency (%)	Cumulative Frequency (%)	Percent of Angler Days (%)	Frequency (%)	Cumulative Frequency (%)	Percent of Angler Days (%)
One	4.2	4.2	0.2	8.5	8.5	1.3	5.2	5.2	0.3
Two	7.1	11.3	0.8	10.2	18.7	3.1	7.8	13.0	1.0
Three	6.5	17.8	1.1	16.1	34.9	7.3	8.7	21.7	1.7
Four	6.5	24.3	1.5	11.4	46.3	6.9	7.6	29.3	2.0
Five	5.5	29.9	1.6	14.4	60.7	10.9	7.5	36.9	2.5
Six	5.0	34.8	1.7	9.0	69.8	8.2	5.9	42.8	2.3
Seven	3.7	38.5	1.5	6.6	76.4	7.0	4.4	47.1	2.0
Eight	3.8	42.3	1.7	2.7	79.1	3.3	3.6	50.7	1.9
Nine	3.2	45.5	1.6	1.8	80.9	2.4	2.8	53.6	1.7
Ten	4.2	49.7	2.4	4.3	85.2	6.5	4.3	57.8	2.8
11-14	9.5	59.3	6.8	6.5	91.7	12.5	8.8	66.6	7.3
15-19	9.3	68.6	8.8	3.7	95.4	9.3	8.0	74.7	8.9
20-24	7.8	76.4	9.6	2.0	97.4	6.5	6.5	81.2	9.3
25+	23.6	100.0	60.7	2.6	100.0	14.7	18.8	100.0	56.1

Figure 2-7
FREQUENCY DISTRIBUTION OF REPORTED ANGLER DAYS, 1985



low end. Of particular note is the fact that less than one-fifth of all anglers account for over half of the total angler days.

2.5 SINGLE DAY FISHING TRIPS

The survey also asked anglers how many of their total angling days were taken on single day fishing trips; the results are given in Table 2-8. As one would expect, single day trips accounted for very little of non-resident's total angling effort less than 2%; while for residents day, trips accounted for over half of their effort. One would expect that the proportion of single days trips to total angler days would be directly related to the proximity of fishing locations to the population centers. Thus, it is not surprising that the highly urbanized Lower Mainland region had a low percentage of day trips to total angling effort; however, the reason why the Omineca region had an even lower percentage is not immediately obvious.

2.6 MONTHLY DISTRIBUTION OF ANGLING EFFORT

The distribution of total angler days in 1985 by the month in which they took place is given in Figure 2-8 and Table 2-9. The warmer months of April through September accounted for the vast majority of angling effort, while the six months of January through March and October through December accounted for less than 17% of total effort. The angling effort of non-residents was even more skewed towards the summer months of June, July and August, when 71% of their total effort took place. Residents on the other hand spent only 55% of their effort in that three-month period.

During the winter months, it is estimated that a total of 221,800 angler days were spent icefishing. This would account for over a quarter of the effort taking place in the winter months. Angling for winter-run steelhead trout is also a popular winter month activity in the coastal regions of the province.

2.7 STEELHEAD TROUT ANGLING EFFORT

Steelhead are an anadromous rainbow trout renowned by anglers for their size and fighting qualities. Although the National Survey did not ask any specific questions about steelhead fishing, information is available from results of the Steelhead Harvest Analysis, an annual postcard questionnaire survey conducted by the Recreational Fisheries Branch since 1966. While the results of the two surveys are not completely comparable, because the National Survey is based on the calendar year whereas the Steelhead Harvest Analysis is based on the fiscal year, the comparisons do highlight the relative importance of steelhead in the fisheries of B.C.'s coastal regions. In order to fish for steelhead, anglers must purchase a basic annual licence and a supplementary steelhead licence (see Figure 1-1 for the fee schedule). During the 1985/86 season 25,619 steelhead licences were sold, 12% of them to nonresidents. Of the licenced steelhead anglers 77% (19,399) were active catching 145,344 fish of which only 13% were retained. The number of angler days spent angling for steelhead in the five regions which contain steelhead are listed in Table 2-10.

As shown in Table 2-10, steelhead trout fishing forms a small component of the province's total angling effort, but it is quite significant in three

TABLE 2-8
ESTIMATED NUMBER OF SINGLE DAY TRIPS BY FRESHWATER ANGLERS, 1985

REGION OF RESIDENCE	SINGLE DAY TRIPS	% OF TOTAL ANGLER DAYS	DAY TRIPS PER ANGLER*
Vancouver Island	277,700	67.3	12.4
Lower Mainland	501,400	43.8	6.3
Thompson-Nicola	320,600	54.6	11.8
Kootenay	356,400	64.9	14.6
Cariboo	125,000	56.4	9.4
Skeena	217,400	66.1	14.7
Omineca	104,000	36.4	5.8
Okanagan	352,300	57.8	10.5
Peace	90,500	63.5	9.3
Total B.C.	2,345,200	54.8	9.7
Canadian Nonresidents	4,100	1.7	0.1
Alien Nonresidents	4,700	2.0	0.1
Total Nonresidents	8,800	1.9	0.1
Total All Anglers	2,354,000	49.5	7.5

* Per Active Angler

Figure 2-8
MONTHLY DISTRIBUTION OF ANGLING EFFORT, 1985
(% of 4,754,000 angler days)

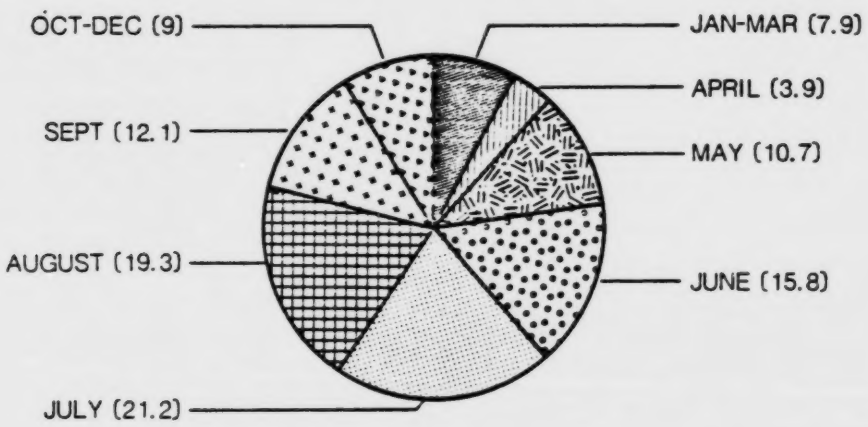


TABLE 2-9
THE ESTIMATED MONTHLY DISTRIBUTION OF FRESHWATER ANGLER DAYS, 1985

MONTH	RESIDENT		NONRESIDENT		ALL ANGLERS	
	ANGLER DAYS	PERCENT	ANGLER DAYS	PERCENT	ANGLER DAYS	PERCENT
Jan. - March	368,800	8.6	7,100	1.5	376,000	7.9
April	181,200	4.2	5,700	1.2	187,000	3.9
May	470,800	11.0	38,300	8.1	509,100	10.7
June	673,000	15.7	79,400	16.8	752,400	15.8
July	870,300	20.3	137,800	29.1	1,008,100	21.2
August	797,200	18.6	120,700	25.5	917,900	19.3
September	521,700	12.2	55,700	11.8	577,400	12.1
Oct. - Dec.	398,000	9.3	28,300	6.0	426,300	9.0
Total	4,281,100	100.0	472,900	100.0	4,754,000	100.0

TABLE 2-10

STEELHEAD TROUT ANGLER DAYS AS A COMPONENT OF TOTAL ANGLER DAYS, 1985

REGIONS CONTAINING STEELHEAD TROUT	STEELHEAD ANGLER DAYS*	% OF REGIONS TOTAL ANGLER DAYS	% OF REGIONS RIVER ANGLER DAYS	% OF TOTAL STEELHEAD DAYS
Vancouver Island	47,538	10.2	25.1	21.6
Lower Mainland	85,157	15.5	23.3	38.9
Thompson-Nicola	14,305	1.4	12.8	6.5
Cariboo	9,457	1.8	10.6	4.3
Skeena	61,006	13.2	21.4	27.8
Unknown Streams	2,119	n.a.	n.a.	0.9
Total	219,582	4.6	15.6	100.0

* Source: Billings, S.J., 1987. Steelhead Harvest Analysis 1985-86. Fisheries Technical Circular No. 76, Recreational Fisheries Branch, Ministry of Environment and Parks, Province of British Columbia, Table 2, page 7.

coastal regions as is shown in column 2. When steelhead angler days are compared to the regions' total river days, as is done in column 3, the significance becomes even greater. Thus, one reason why the Vancouver Island, Lower Mainland and Skeena regions have a significantly higher proportion of river days, as compared to lake days, may be the presence of the steelhead fisnery.

2.8 JUVENILE ANGLERS AND ANGLING EFFORT

The survey asked anglers how many juveniles in their household (those under 16 years of age) fished in B.C.'s freshwaters during 1985. In addition, nonresidents were asked how many days the juveniles fished while in B.C. The results are reported in Table 2-11. The proportion of juvenile anglers who were nonresidents was lower than the proportion of licenced anglers who were nonresidents. Nonresident juveniles added a further 52,000 angler days increasing the total by only 1%. Nonresident juveniles fished on average 3.4 days, about half the average for active licenced nonresident anglers.

Estimates of angling effort by resident juvenile anglers, given in Table 2-11, were calculated using the average angler days per juvenile angler from tne 1980 National Survey of Sport Fishing (see Stone, 1982). This method of estimation implicitly assumes that the average angler days per juvenile angler has remained constant over the last five years. The results should be used with caution. However, the estimates suggest that resident juvenile anglers would add an additional 851 thousand angler days, increasing the resident total by 20% to 5.1 million angler days. The grand total for all resident and nonresident anglers would tnen be 5.66 million angler days.

2.9 SALTWATER FISHING BY FRESHWATER ANGLERS

Anglers were asked if they had purchased a tidal waters angling licence in 1985 and, if they had, how many days they had fished in tidal waters in B.C. during 1985. The results are presented in Table 2-12. Over a third of all active resident anglers had purchased a saltwater licence; however, the proportion varied greatly by region of residence. The coastal regions had a much higher participation rate than noncoastal regions. Vancouver Island had, by far, the highest participation rate where over three quarters of active freshwater anglers also fished in saltwater. The participation rate of nonresident anglers was much lower than residents, with less than one-sixth of active nonresident freshwater anglers also fishing partaking in salt water. The distribution of tidal water effort is even more skewed with over 71% of tidal water angler days generated by residents of Vancouver Island and tne Lower Mainland regions. While the average number of tidal water days per tidal water angler and per active freshwater angler is much higher for the coastal regions, it is Vancouver Island which had by far the greatest average effort per angler. Indeed, if one were to add tidal water angler days to freshwater angler days it would be the residents of Vancouver Island region, not the Kootenay region, which on average did the most fisning.

TABLE 2-11

ESTIMATED FRESHWATER ANGLING ACTIVITY BY JUVENILE ANGLERS, 1985

REGION OF RESIDENCE	NUMBER OF ANGLERS	PERCENT OF TOTAL ANGLERS	JUVENILE ANGLER DAYS
Vancouver Island	9,163	8.8	89,200e
Lower Mainland	21,948	21.0	157,100e
Thompson-Nicola	11,025	10.6	111,000e
Kootenay	10,163	9.7	147,900e
Cariboo	6,038	5.8	58,300e
Skeena	6,677	6.4	76,800e
Omineca	8,819	8.4	73,600e
Okanagan	9,782	9.4	91,900e
Peace	5,455	5.2	45,500e
Total B.C.	89,070	85.3	851,300e
Canadian Nonresidents	9,164	8.8	30,600
Alien Nonresidents	6,176	5.9	21,400
Total Nonresidents	15,340	14.7	52,000
Total All Anglers	104,410	100.0	903,300e

e - Estimated using average angler days per juvenile angler from the 1980 National Survey (see Stone 1982).

TABLE 2-12

DAYS FISHED IN TIDAL WATERS BY ACTIVE FRESHWATER ANGLERS, 1985

REGION OF RESIDENCE	TIDAL WATER ANGLERS	% OF TOTAL ACTIVE ANGLERS	DAYS FISHED TIDAL WATERS	% OF TOTAL DAYS	DAYS PER TIDAL WATER ANGLER	DAYS PER ACTIVE FRESHWATER ANGLER
Vancouver Island	17,081	76.6	331,200	34.5	19.4	14.8
Lower Mainland	38,631	48.5	353,700	36.8	9.2	4.4
Thompson-Nicola	5,169	19.1	32,900	3.4	6.4	1.2
Kootenay	2,497	10.2	18,700	1.9	7.5	0.7
Cariboo	2,773	20.8	13,800	1.4	5.0	1.0
Skeena	5,193	35.1	54,400	5.7	10.5	3.7
Omineca	3,114	17.4	17,700	1.8	5.7	1.0
Okanagan	6,249	18.7	55,500	5.8	8.9	1.7
Peace	1,328	13.7	10,700	1.1	8.1	1.1
Total Residents	82,035	33.8	888,600	92.5	10.8	3.7
Canadian Nonresident	6,209	17.3	31,000	3.2	5.0	0.9
Alien Nonresident	4,789	13.4	41,400	4.3	8.6	1.2
All Nonresidents	10,998	15.4	72,400	7.5	6.6	1.0
All Anglers	93,033	29.6	961,000	100.0	10.3	3.1

CHAPTER THREE
CATCH AND HARVEST ESTIMATES

3.1 ESTIMATES OF TOTAL CATCH AND HARVEST

It is estimated that licenced anglers caught over nine million fish during 1985. The breakdown of total catch by region of residence and by region fished is detailed in Table 3-1 and in Figures 3-1 and 3-2. The region fished with the largest share of total catch was the Thompson-Nicola followed by the Kootenay, Okanagan and Cariboo regions. The region of residence whose anglers caught the most fish were the Okanagan followed in order by the Lower Mainland, Kootenay and Thompson-Nicola regions. Residents accounted for over 8 million fish or 86% of the total catch. Nonresidents caught 1.3 million fish.

Anglers retained, or harvested, 5.8 million of the fish they caught releasing the remainder for a retention rate of 62%. Table 3-2 presents the breakdown of total harvest by the region of residence and region fished. Figures 3-3 and 3-4 give the percentage distribution of total harvest by region of residence and region fished respectively.

Not all of the fish caught and harvested in British Columbia during 1985 were the result of natural fish production. Instead the natural production of game fish is augmented by the output of six provincial hatcheries which produce fry, fingerlings and catchable-size rainbow trout. During 1985, 8.1 million rainbow trout, cutthroat trout, brook trout and kokanee were stocked in 545 lakes and streams throughout the province. In addition, 3.7 million kokanee eggs were also planted. It is not known what percentage of total catch and harvest is accounted for by hatchery-reared fish.

3.2 ANGLER SUCCESS RATES

Four measures of angler success rates are used in this section: catch and harvest per angler day, and catch and harvest per angler. Table 3-3 shows how these measures of success rates varied across the regions fished, while Table 3-4 shows the variation by the region of residence. Both tables also present the percentage of fish caught and kept. On a catch per day and harvest per day basis, the Okanagan was the region fished with the highest success rate; however, on a catch and harvest per angler basis, the Kootenay just surpasses the Okanagan. The region fished with the consistently lowest average success rate across all four measures was the Lower Mainland. The regions with the lowest success rates - the Lower Mainland, Vancouver Island and Skeena regions - were also the three regions with the highest proportion of river fishing days, and the most steelhead angling. These were also the three regions with the lowest percentage of total fish caught and kept.

Nonresidents were, on a catch per day and harvest per day basis, quite a bit more successful than resident anglers. Aliens were first overall, with Canadian nonresidents in third spot behind Okanagan residents. However, nonresidents retained a lower percentage of their catch causing their average harvest per day to be much closer to the resident average. On the other hand, residents who on average fished more than nonresidents had a

TABLE 3-1
ESTIMATED TOTAL FRESHWATER CATCH, 1985

REGION OF RESIDENCE	REGION FISHED									
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace	B.C. Total
Vancouver Island	671,900	1,300	21,500	7,500	25,000	4,400	4,600	6,300	700	743,200
Lower Mainland	80,300	457,400	533,200	47,900	335,000	22,900	26,200	69,300	8,400	1,580,700
Thompson-Nicola	3,400	1,000	1,049,100	21,100	52,400	9,600	3,000	32,800	1,900	1,174,400
Kootenay	1,400	0	13,800	1,175,600	8,900	5,800	900	14,500	0	1,220,900
Cariboo	4,800	0	10,400	6,800	403,700	3,800	13,900	1,600	3,200	448,100
Skeena	0	3,500	1,900	1,200	800	409,200	18,400	4,400	500	440,000
Omineca	600	300	3,000	6,200	55,900	62,000	446,600	1,000	9,800	585,400
Okanagan	2,300	11,200	166,800	66,800	9,600	8,300	5,400	1,305,700	13,900	1,589,900
Peace	0	400	800	500	1,900	4,200	81,100	500	216,700	306,100
Total Residents	764,700	475,100	1,800,800	1,333,600	893,200	530,200	600,100	1,436,000	255,100	8,088,700
Canadian Nonres.	16,500	6,400	73,600	215,800	43,700	534	87,600	66,400	40,700	604,100
Alien Nonresidents	13,100	14,200	174,500	38,700	215,800	148,800	26,900	63,900	6,700	702,700
Total Nonresidents	29,600	20,600	248,100	254,500	259,500	202,200	114,500	130,300	47,400	1,306,800
Total All Anglers	794,400	495,700	2,048,900	1,588,100	1,152,800	732,300	714,600	1,566,200	302,500	9,395,500

Figure 3-1
DISTRIBUTION OF CATCH BY REGION OF RESIDENCE, 1985
(% of 9,395,500 fish)

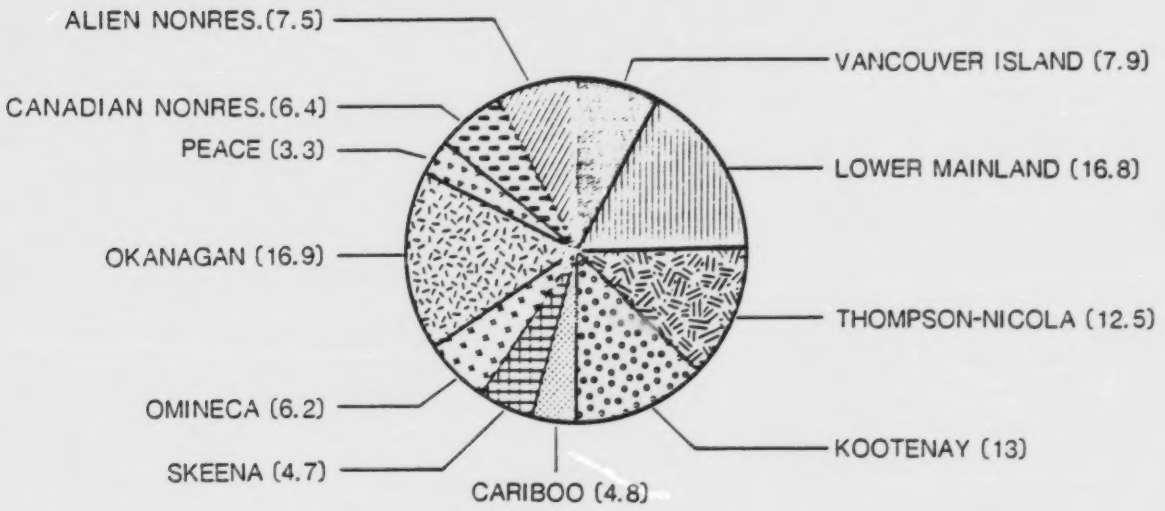


Figure 3-2
DISTRIBUTION OF CATCH BY REGION FISHED, 1985
(% of 9,395,500 fish)

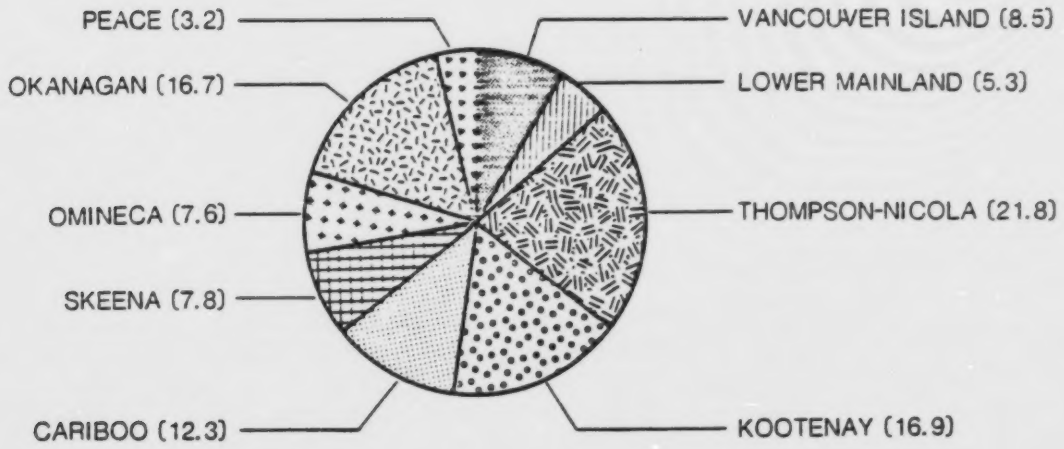


TABLE 3-2

ESTIMATED TOTAL FRESHWATER HARVEST, 1985

REGION OF RESIDENCE	REGION FISHED									
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace	B.C. Total
Vancouver Island	302,100	600	11,800	6,500	14,900	1,600	4,500	2,600	300	345,000
Lower Mainland	32,200	230,200	352,100	27,200	193,700	13,100	16,900	45,500	7,100	918,000
Thompson-Nicola	3,400	300	714,300	19,200	36,700	6,700	1,500	21,800	1,500	805,400
Kootenay	1,400	0	8,800	797,800	8,700	4,700	500	13,000	0	834,500
Cariboo	1,800	0	9,200	4,100	266,900	2,700	8,100	1,500	2,000	296,300
Skeena	0	1,100	400	900	0	203,100	14,100	4,400	200	224,200
Omineca	600	0	2,400	5,900	33,000	40,400	322,600	1,000	8,900	414,700
Okanagan	1,200	3,900	119,900	50,500	8,800	4,600	4,300	878,600	8,000	1,079,800
Peace	0	300	0	400	1,400	2,600	53,600	500	159,200	217,900
Total Residents	342,600	236,400	1,218,600	912,400	564,000	279,600	426,100	969,000	187,100	5,135,800
Canadian Nonres.	4,900	2,800	35,900	133,000	23,500	27,100	35,500	32,400	22,600	317,700
Alien Nonresidents	6,400	10,200	92,700	23,500	128,600	50,800	12,600	32,400	4,600	361,900
Total Nonresidents	11,300	13,100	128,600	156,500	152,100	77,900	48,100	64,800	27,200	679,600
Total All Anglers	353,900	249,500	1,347,100	1,068,800	716,000	357,800	474,200	1,033,800	214,400	5,815,400

Figure 3-3
DISTRIBUTION OF HARVEST BY REGION OF RESIDENCE, 1985
(% of 5,815,400 fish)

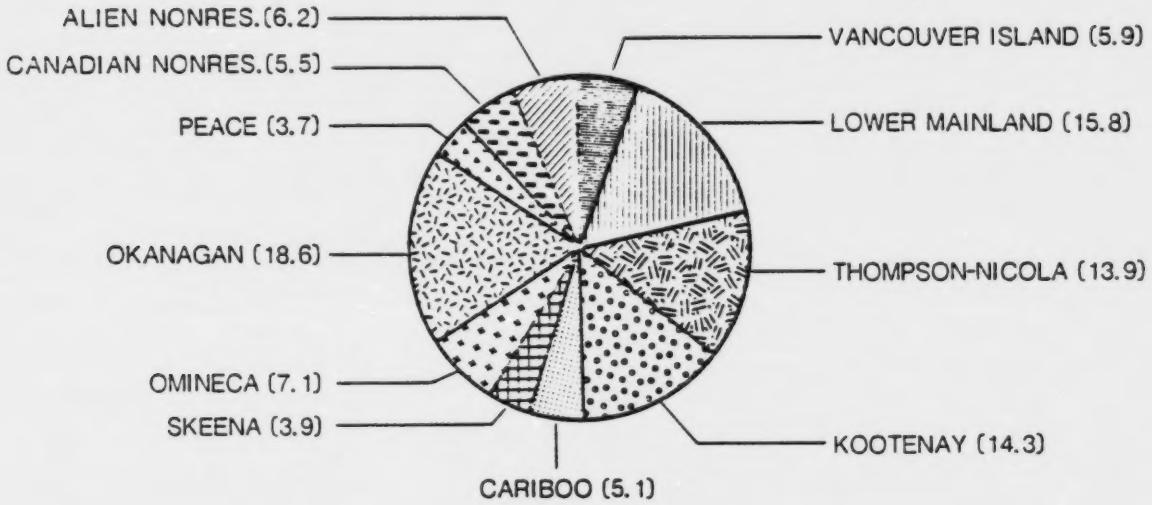


Figure 3-4
DISTRIBUTION OF HARVEST BY REGION FISHED, 1985
(% of 5,815,400 fish)

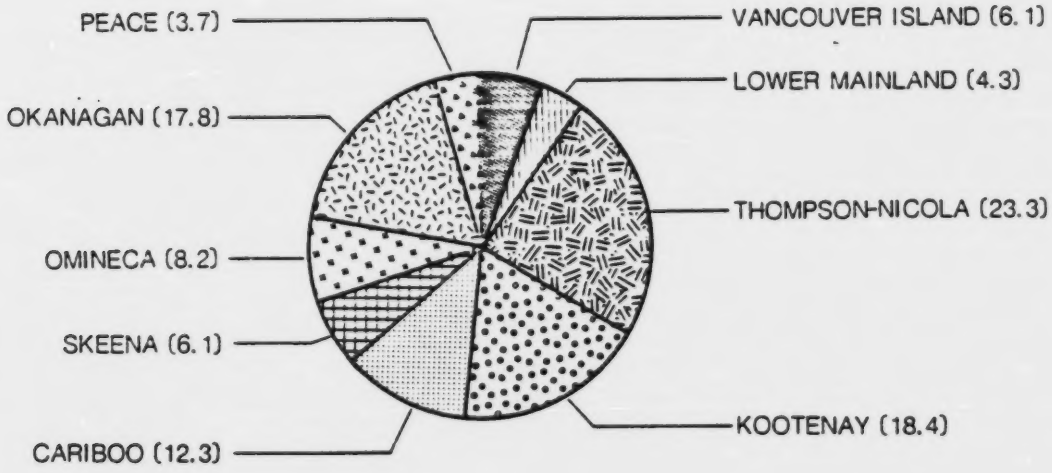


TABLE 3-3
ANGLER SUCCESS RATES BY REGION FISHED, 1985

REGION FISHED	CATCH PER DAY	CATCH PER ANGLER*	HARVEST PER DAY	HARVEST PER ANGLER*	% CAUGHT AND KEPT
Vancouver Island	1.70	23.5	0.76	10.5	44.5
Lower Mainland	0.90	10.6	0.45	5.3	50.3
Thompson-Nicola	2.07	23.4	1.36	15.4	65.7
Kootenay	2.25	31.6	1.51	21.3	67.3
Cariboo	2.19	21.4	1.36	13.3	62.1
Skeena	1.58	19.7	0.77	9.6	49.9
Omineca	2.14	22.0	1.42	14.6	66.4
Okanagan	2.65	30.4	1.75	20.1	66.0
Peace	2.37	20.1	1.68	14.2	70.9
B.C.	1.98	29.9	1.22	18.5	61.9

* Per Active Angler

TABLE 3-4

ANGLER SUCCESS RATES BY REGION OF RESIDENCE, 1985

REGION OF RESIDENCE	CATCH PER DAY	CATCH PER ANGLER	HARVEST PER DAY	HARVEST PER ANGLER	% CAUGHT AND KEPT
Vancouver Island	1.80	33.3	0.84	15.5	46.4
Lower Mainland	1.38	19.8	0.80	11.5	58.1
Thompson-Nicola	2.00	43.4	1.37	29.8	68.6
Kootenay	2.22	49.8	1.52	34.1	68.4
Cariboo	2.02	33.6	1.34	22.2	66.1
Skeena	1.34	29.8	0.68	15.2	51.0
Omineca	2.05	32.7	1.45	23.2	70.8
Okanagan	2.61	47.5	1.77	32.3	67.9
Peace	2.15	31.6	1.53	22.5	71.2
Residents	1.89	33.3	1.20	21.2	63.5
Canadian Nonres.	2.48	16.9	1.31	8.9	52.6
Alien Nonresidents	3.06	19.7	1.57	10.1	51.5
All Nonresidents	2.76	18.3	1.44	9.5	52.0
All Anglers	1.98	29.9	1.22	18.5	61.9

much higher catch per angler and harvest per angler. Residents of the Skeena region were the least successful on an average catch per day and harvest per day basis.

3.3 CATCH AND HARVEST BY SPECIES

The estimated total 1985 catch by species and region fished is detailed in Table 3-5 and Figure 3-5, and total harvest is given in Table 3-6 and Figure 3-6. Rainbow trout accounted for 58% of total catch and 57% of total harvest. The next two most important species are kokanee and cutthroat trout. All of the remaining species account for less than one fifth of total catch and harvest. Rainbow trout comprised the largest share of total catch in six of the nine regions fished. However, rainbow trout was surpassed by cutthroat trout in Vancouver Island, by walleye in the Peace and just surpassed by kokanee in the Kootenay.

Figure 3-7 shows the percentage of fish caught and kept by species. Kokanee had by far the highest retention rate, followed by walleye. Rainbow trout, Dolly Varden, other char and Arctic grayling all had approximately the same retention rates. Other fish, which would include coarse and non-game species, was the species category with the lowest retention rate. Factors which could affect retention include regulations concerning size and daily and annual possession quotas, plus species desirability.

3.4 SPECIES PREFERENCES

Anglers were asked, of the freshwater species available in British Columbia, which three they preferred to fish for. The results are given in Table 3-7, which shows that rainbow trout were the preferred species across all regions of residence. Only in the Skeena region did rainbow trout fail to gain an absolute majority of the anglers. Salmon and steelhead (an ocean-going rainbow trout) were close contenders for top spot in the Skeena. Overall, kokanee and cutthroat trout were the next two most preferred species. Kokanee was particularly popular in the southern interior regions, and less so in the coastal and northern regions where they are smaller and less abundant.

3.5 DISPOSITION OF THE FISH HARVESTED

The survey asked anglers to estimate the total weight of the fish they harvested from British Columbia fresh waters in 1985. They were also asked to estimate what percentage of the fish were eaten by themselves or their household members, and what percentage was given away to others. The results are reported in Table 3-8. If the anglers' recall of the total weight of their harvest is accurate, then 8 million pounds of fish were harvested in 1985. This suggests that the average weight per fish was 1.36 pounds. The average weight of nonresidents' harvest was marginally greater than residents. However, it was the Skeena region and the Lower Mainland region residents which had the largest fish with the Skeena average being over 1 pound per fish larger than the provincial average. This may be due to salmon and steelhead trout forming a significantly larger proportion of total harvest in these two regions. Over 85% of the fish harvested were eaten by the anglers and their families.

TABLE 3-5

ESTIMATED TOTAL FRESHWATER CATCH BY SPECIES AND REGION FISHED, 1985

SPECIES	REGION FISHED									
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace	B.C. Total
Rainbow Trout	260,500	195,300	1,691,300	555,900	847,700	339,900	440,800	1,001,600	74,200	5,407,100
Cutthroat Trout	367,300	105,400	-	166,500	41,300	134,900	6,000	27,700	1,500	850,600
Kokanee	17,600	44,400	170,300	556,100	127,000	19,200	46,900	371,000	5,700	1,358,200
Dolly Varden	31,000	15,000	19,500	58,300	26,300	57,100	41,800	5,600	15,300	270,000
Other Char	9,700	2,800	136,100	85,000	59,400	59,300	48,800	71,300	6,900	479,300
Other Trout	39,600	24,800	-	21,400	20,900	-	18,600	12,900	2,500	140,600
Salmon	43,400	66,000	1,500	-	11,100	69,800	-	1,000	-	192,800
Northern Pike	-	-	-	-	-	4,300	6,600	-	24,700	35,700
Walleye	-	-	-	7,000	-	200	19,400	-	114,900	141,500
Perch	-	6,600	-	29,400	-	200	1,500	10,900	6,700	55,300
Arctic Grayling	-	-	-	24,100	1,100	14,400	14,100	-	24,700	78,500
Other Fish	25,300	35,400	30,200	84,400	18,000	33,000	70,100	64,200	25,400	386,000
Total All Species	794,400	495,700	2,048,900	1,588,100	1,152,800	732,300	714,600	1,566,200	302,500	9,395,500

Figure 3-5
DISTRIBUTION OF CATCH BY SPECIES, 1985
(% of 9,395,500 fish)

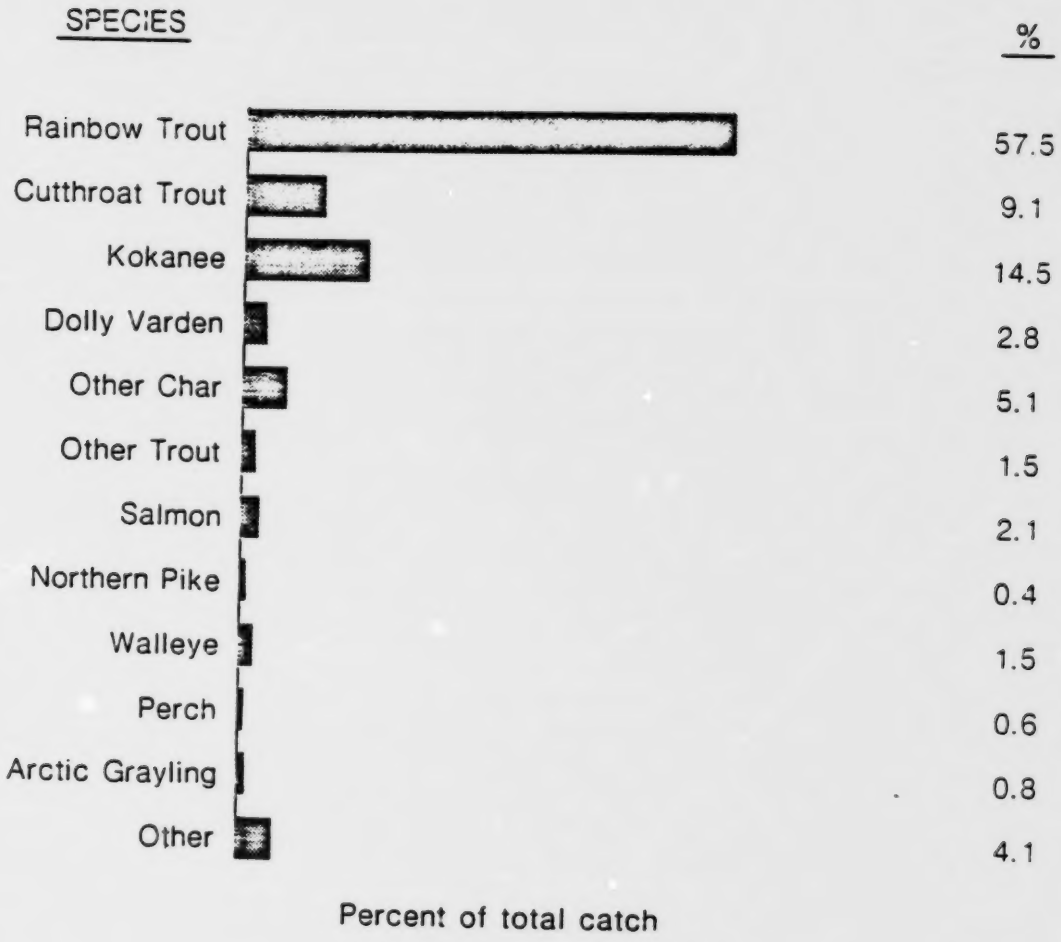


TABLE 3-6

ESTIMATED TOTAL FRESHWATER HARVEST BY SPECIES AND REGION FISHED, 1985

SPECIES	REGION FISHED									
	Vancouver Island	Lower Mainland	Thompson-Nicola	Kootenay	Cariboo	Skeena	Omineca	Okanagan	Peace	B.C. Total
Rainbow Trout	123,100	95,000	1,080,400	316,500	528,200	173,000	301,900	637,200	49,300	3,304,600
Cutthroat Trout	173,300	58,100	-	86,000	19,200	62,100	3,400	14,100	400	416,600
Kokanee	13,200	29,900	153,200	487,200	96,700	15,800	40,200	287,300	5,000	1,128,500
Dolly Varden	11,400	6,400	16,800	45,800	13,500	24,600	32,000	3,800	10,100	164,400
Other Char	5,800	1,000	87,500	46,300	38,800	32,700	36,600	43,200	5,400	297,300
Other Trout	8,100	7,900	-	8,500	6,500	-	15,200	10,300	2,300	58,700
Salmon	14,600	39,600	600	-	4,800	34,100	-	200	-	93,900
Northern Pike	-	-	-	-	-	1,000	3,100	-	12,100	16,200
Walleye	-	-	-	5,500	-	200	10,200	-	91,400	107,300
Perch	-	-	-	12,600	-	200	300	10,400	6,000	29,500
Arctic Grayling	-	-	-	16,000	1,100	5,700	10,200	-	15,700	48,700
Other Fish	4,400	11,600	8,600	44,400	7,200	8,300	21,100	27,300	16,700	149,600
Total All Species	353,900	249,500	1,347,100	1,068,800	716,000	357,800	474,200	1,033,800	214,400	5,815,400

Figure 3-6
DISTRIBUTION OF HARVEST BY SPECIES, 1985
(% of 5,815,400 fish)

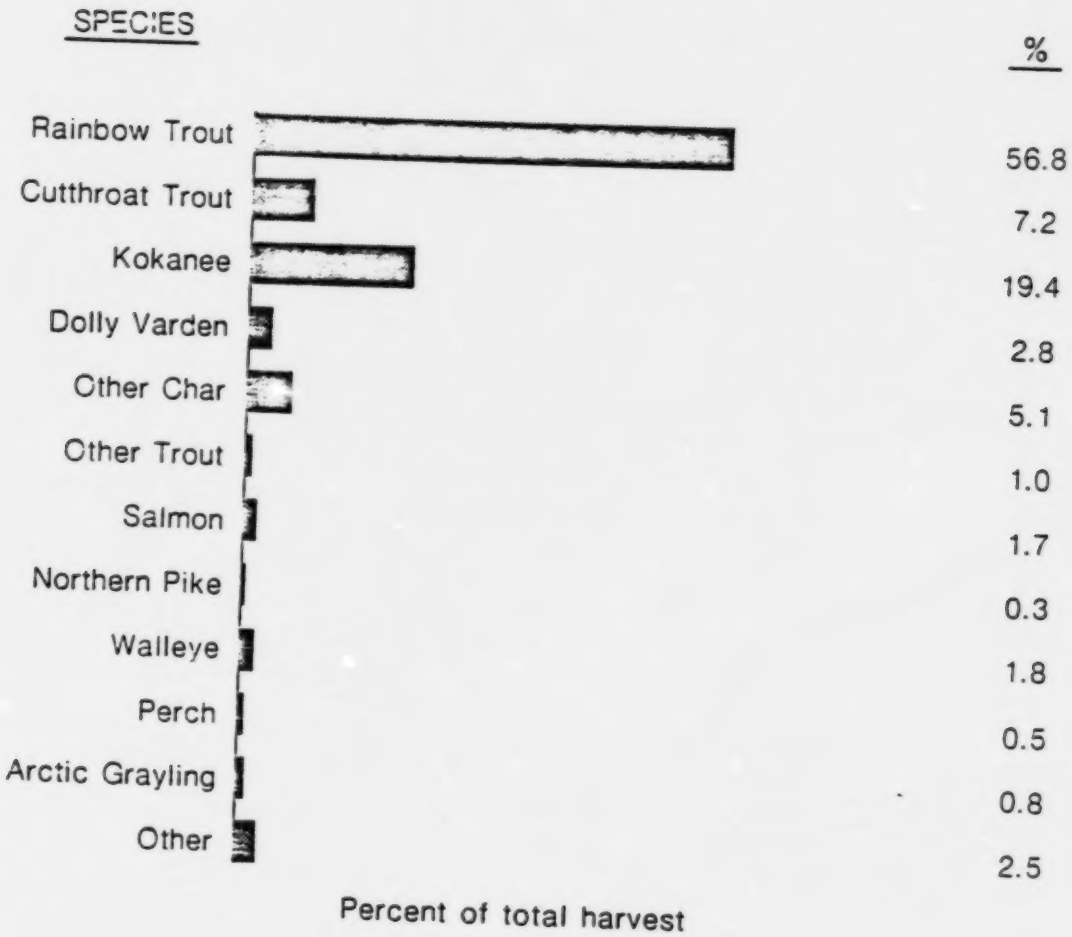


Figure 3-7
PERCENT OF FISH CAUGHT AND KEPT BY SPECIES, 1985

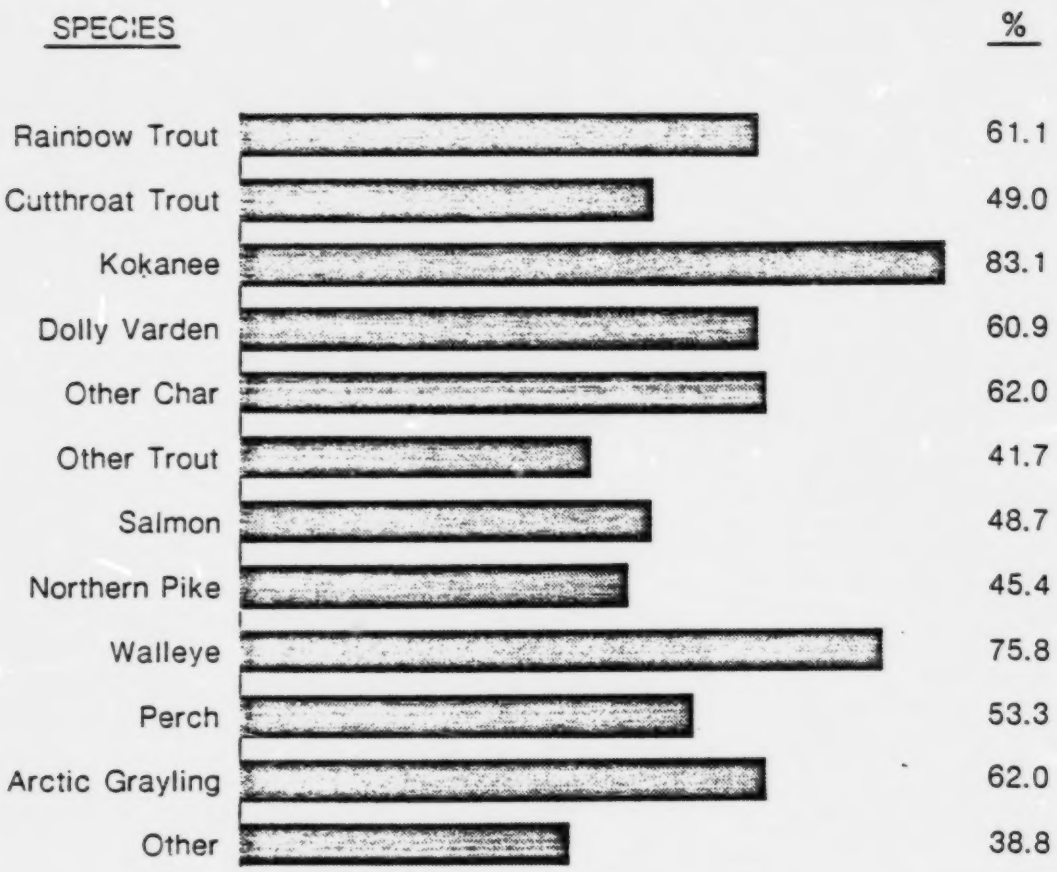


TABLE 3-7
SPECIES PREFERENCES, 1985

REGION OF RESIDENCE	SPECIES PREFERENCE		
	FIRST	SECOND	THIRD
Vancouver Island	Rainbow Trout	Cutthroat	Steelhead
Lower Mainland	Rainbow Trout	Cutthroat	Kokanee
Thompson-Nicola	Rainbow Trout	Kokanee	Salmon
Kootenay	Rainbow Trout	Kokanee	Cutthroat
Cariboo	Rainbow Trout	Kokanee	Dolly Varden
Skeena	Rainbow Trout	Salmon	Steelhead
Omineca	Rainbow Trout	Arctic Char	Kokanee
Okanagan	Rainbow Trout	Kokanee	Brook Trout
Peace	Rainbow Trout	Dolly Varden	Walleye
Total Residents	Rainbow Trout	Kokanee	Cutthroat
Canadian Nonres.	Rainbow Trout	Kokanee	Salmon
Alien Nonres.	Rainbow Trout	Cutthroat	Kokanee
Total Nonres.	Rainbow Trout	Kokanee	Salmon
Total All Anglers	Rainbow Trout	Kokanee	Cutthroat

TABLE 3-8

ESTIMATED DISPOSITION OF FISH KEPT BY ACTIVE ANGLERS, 1985

REGION OF RESIDENCE	TOTAL NUMBER OF FISH KEPT	TOTAL WEIGHT OF FISH KEPT (lbs.)	AVERAGE WEIGHT (lbs.)	% EATEN BY ANGLERS (%)	% GIVEN AWAY (%)
Vancouver Island	345,000	419,800	1.22	84.8	15.2
Lower Mainland	918,000	1,522,400	1.66	89.6	10.4
Thompson-Nicola	805,400	1,028,800	1.28	79.0	21.0
Kootenay	834,500	891,000	1.07	82.3	17.7
Cariboo	296,300	436,500	1.47	91.6	8.4
Skeena	224,200	541,800	2.42	85.1	14.9
Omineca	414,700	588,300	1.42	84.8	15.4
Okanagan	1,079,800	1,144,400	1.06	84.4	15.6
Peace	217,900	314,100	1.44	84.9	15.1
Total Residents	5,135,800	6,887,000	1.34	85.0	15.0
Canadian Nonres.	317,700	460,500	1.45	90.1	9.9
Alien Nonres.	361,900	537,000	1.48	88.5	11.5
Total Nonres.	679,600	997,500	1.47	89.2	10.8
Total All Anglers	5,815,400	7,884,500	1.36	85.6	14.4

CHAPTER FOUR
FACTORS WHICH EFFECT THE ENJOYMENT OF SPORTFISHING

4.1 INTRODUCTION

One important set of questions in the survey asked anglers how important a group of eleven factors was in determining how much they enjoyed a day of fishing. The anglers were asked to rate each of the following factors as very important, important or not important:

- Privacy from other fishing parties
- Number of fish caught
- Natural beauty of surroundings
- Weather conditions
- Size of fish caught
- Escape from work or household routine
- Your catch as a source of food
- Quality of water
- Angling for wild (not hatchery) fish
- Access to wilderness areas
- Catching the desired species.

The results are presented in Figures 4-1 to 4-11. Part A of each figure shows the percentage distribution of all anglers' responses. Part B shows variations in responses by region of residence by graphing tne percent who answered very important or important for each residence area.

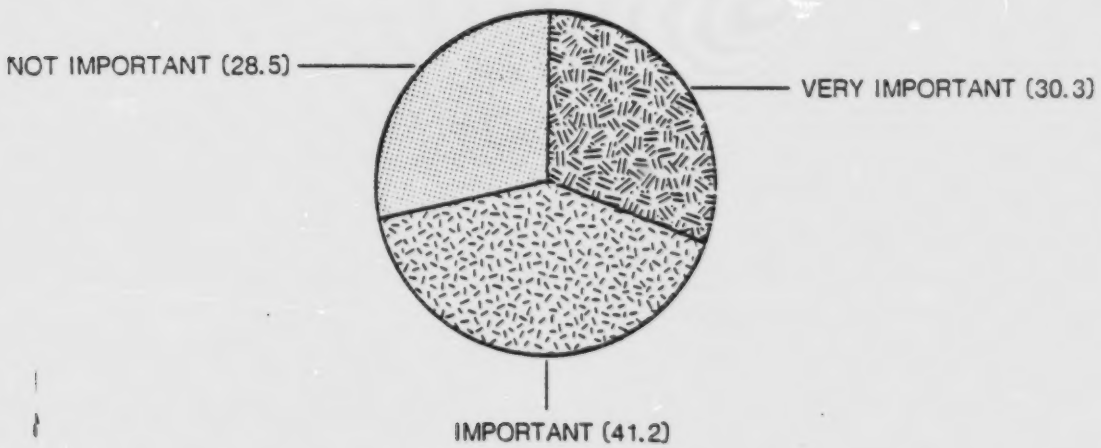
4.2 FACTOR RATINGS

The two factors rated as very important by the greatest number of anglers were Quality of Water (61.9%) and Natural Beauty (60.5%). The three factors rated as not important by most anglers were Catch as a Source of Food (76.0%), Fishing for Wild Not Hatchery Fish (53.4%) and Number of Fish Caught (51.1%). While there were variations in the answers by region of residence for each factor, the most striking regional differences occurred in three factors relating to catch: number of fish caught, size of fish caught and fishing for wild not hatchery fish. For these three factors, nonresidents had a significantly higher rating of their importance than resident anglers. Alien nonresidents, in particular, rated these factors much higher. This may suggest that nonresident participation in B.C.'s freshwater sport fishery is much more likely to be effected by changes in fish abundance than is resident participation. This should not be considered surprising given the greater travel distances and costs faced by nonresidents wisning to fish in B.C. On the other hand, resident anglers' low ratings of these three factors may indicate a general satisfaction with the current abundance of fish and their catch probability.

4.3 FACTOR RANKINGS

The ratings for each factor are summarized in Table 4-1, which also ranks the factors in order of importance. The rankings of the factors, shown graphically in Figure 4-12, was done by adding the percent very important to the percent important and ordering from high to low. The results

Figure 4-1
IMPORTANCE OF PRIVACY FROM OTHER FISHING PARTIES
(Percent)



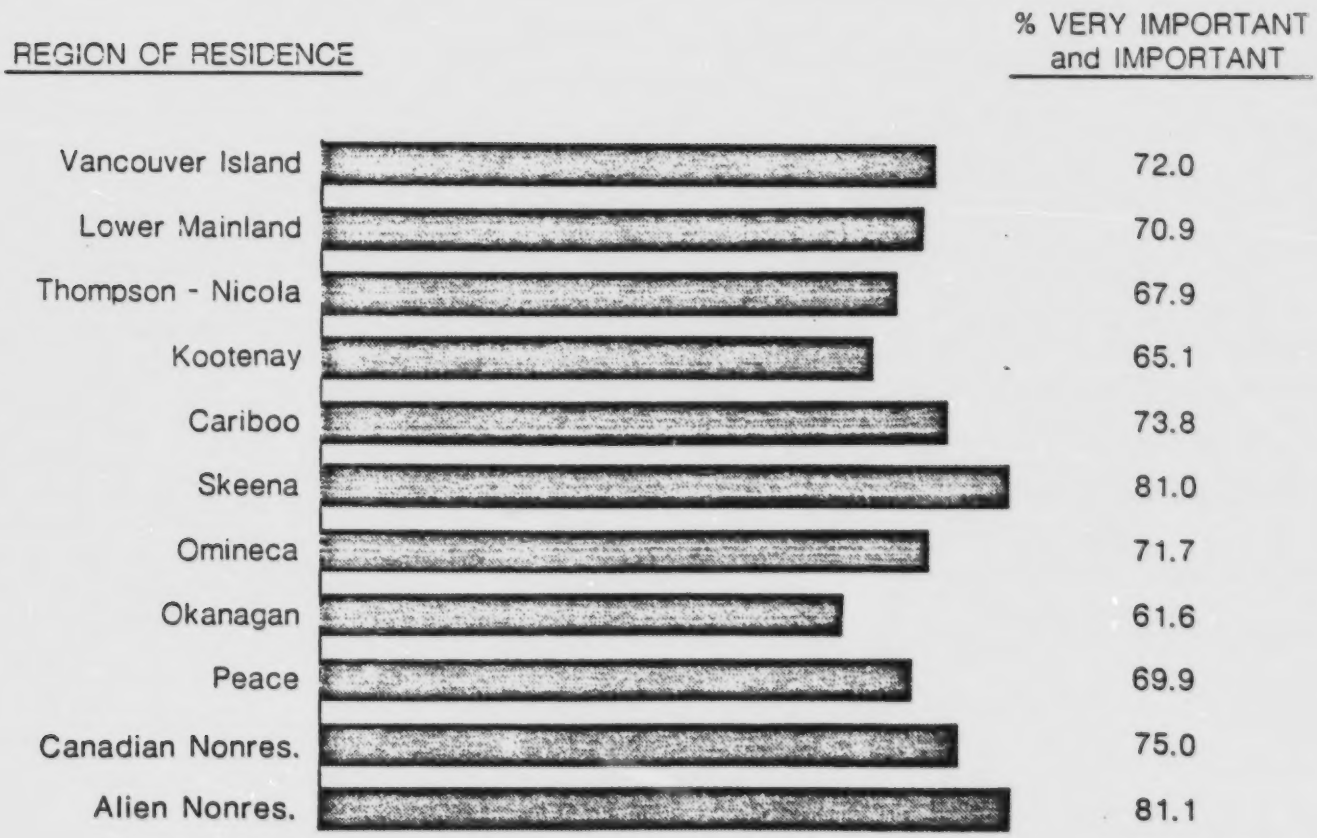
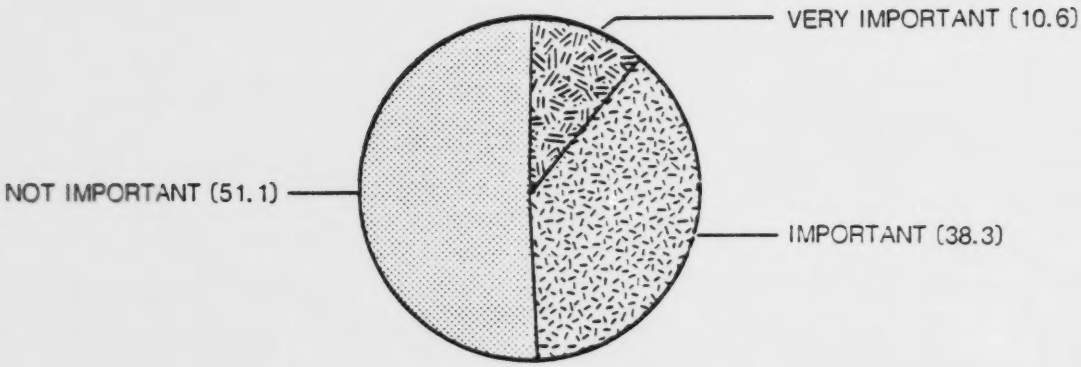
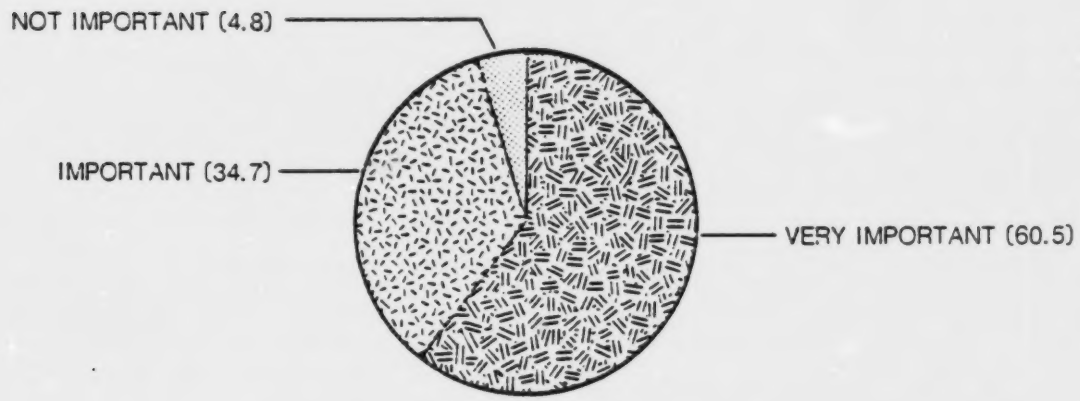


Figure 4-2
IMPORTANCE OF NUMBER OF FISH CAUGHT
(Percent)



REGION OF RESIDENCE	% VERY IMPORTANT and IMPORTANT
Vancouver Island	40.4
Lower Mainland	44.9
Thompson - Nicola	40.9
Kootenay	47.4
Cariboo	42.1
Skeena	39.0
Omineca	50.3
Okanagan	47.9
Peace	53.1
Canadian Nonres.	54.8
Alien Nonres.	70.1

Figure 4-3
IMPORTANCE OF NATURAL BEAUTY OF SURROUNDINGS
(Percent)



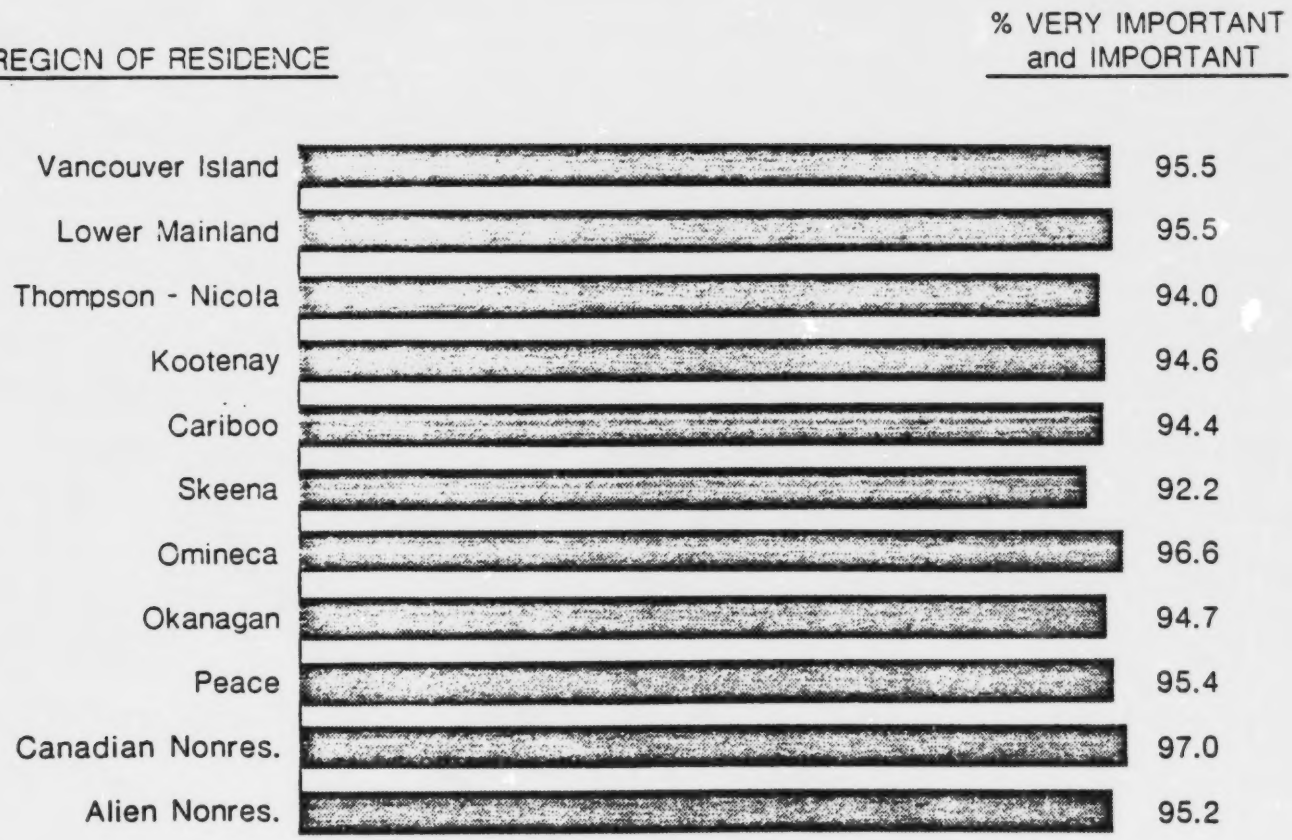
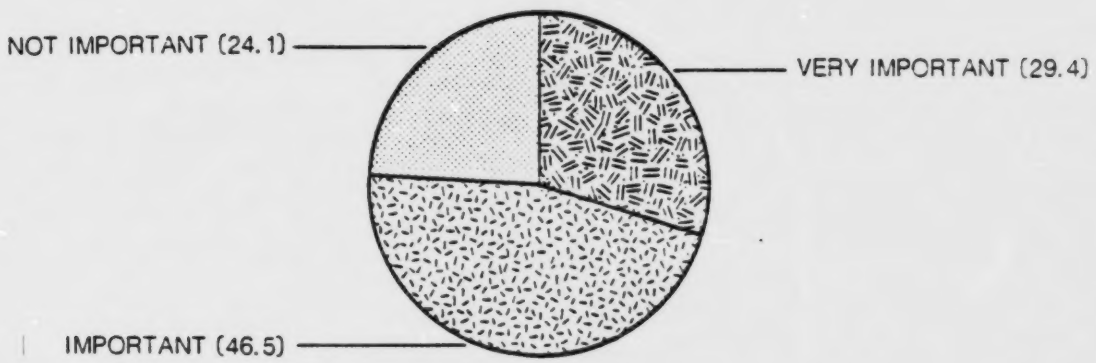
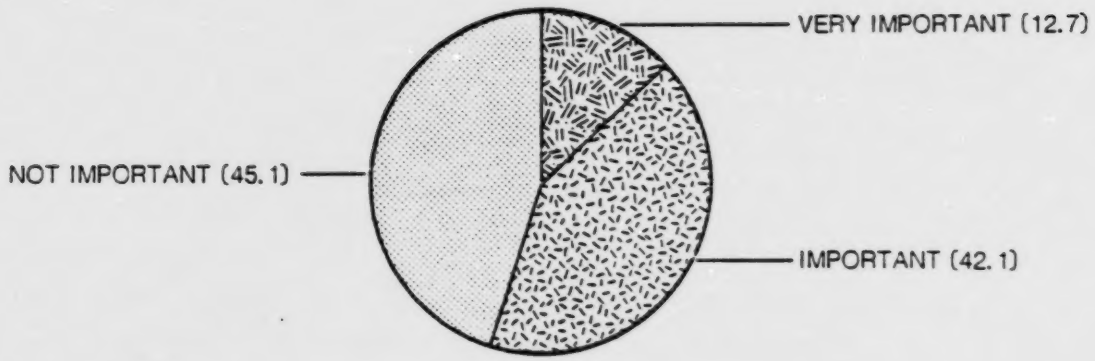


Figure 4-4
IMPORTANCE OF WEATHER CONDITIONS
(Percent)



REGION OF RESIDENCE	% VERY IMPORTANT and IMPORTANT
Vancouver Island	63.1
Lower Mainland	75.3
Thompson - Nicola	76.2
Kootenay	75.3
Cariboo	77.3
Skeena	71.2
Omineca	80.7
Okanagan	80.2
Peace	87.2
Canadian Nonres.	76.1
Alien Nonres.	77.4

Figure 4-5
IMPORTANCE OF SIZE OF FISH CAUGHT
(Percent)



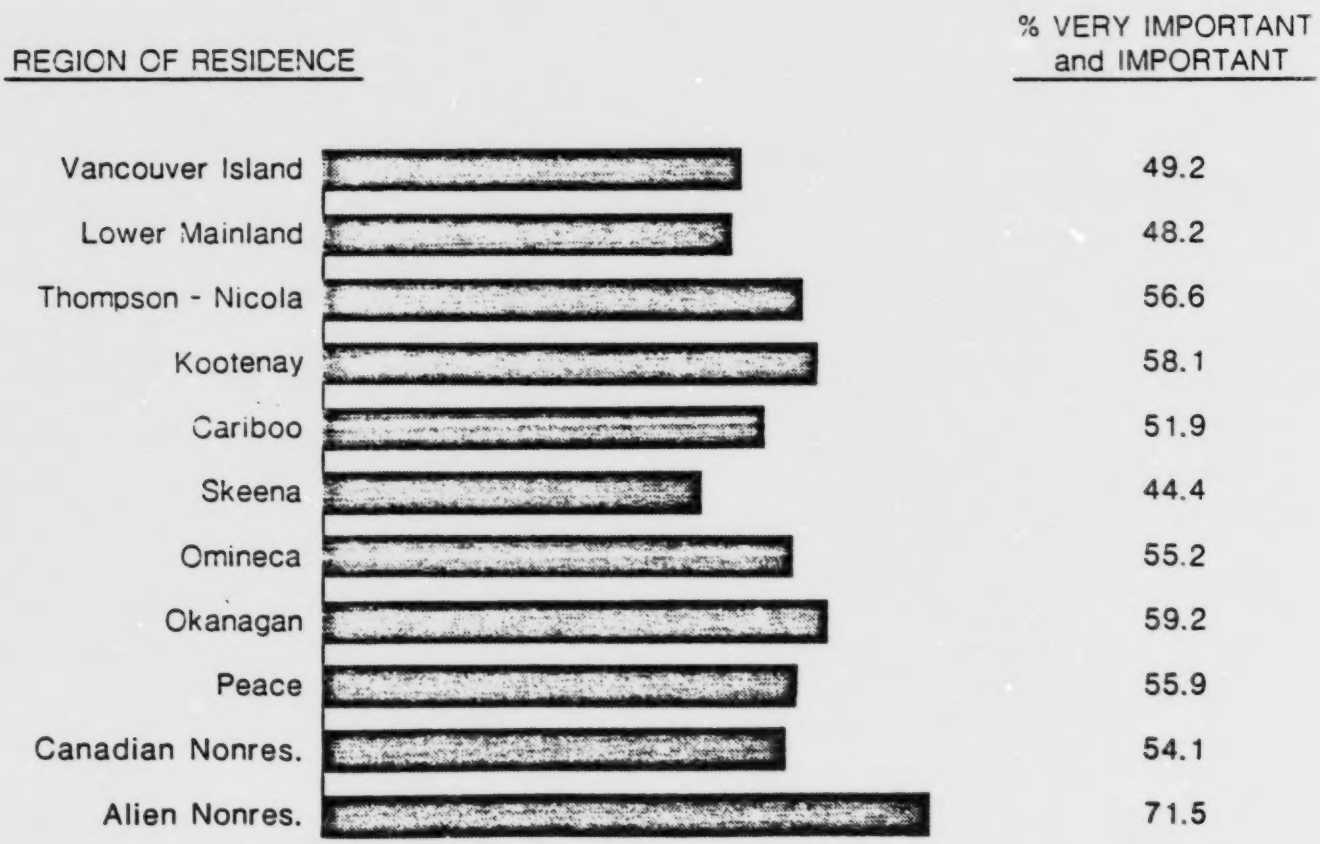
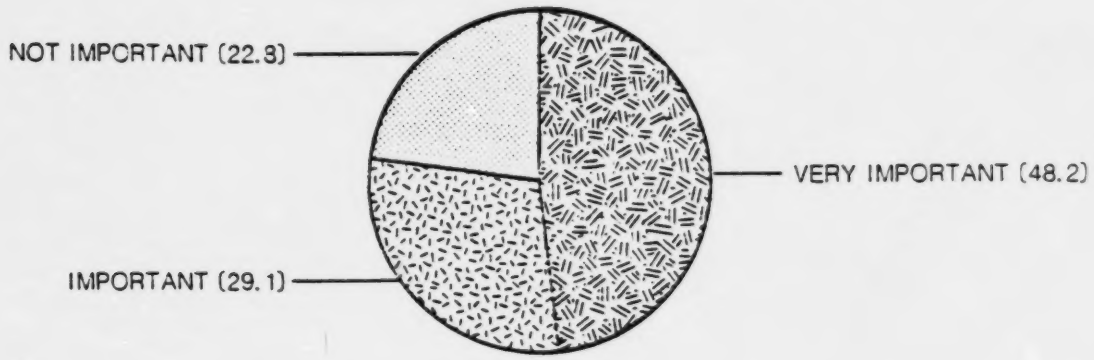
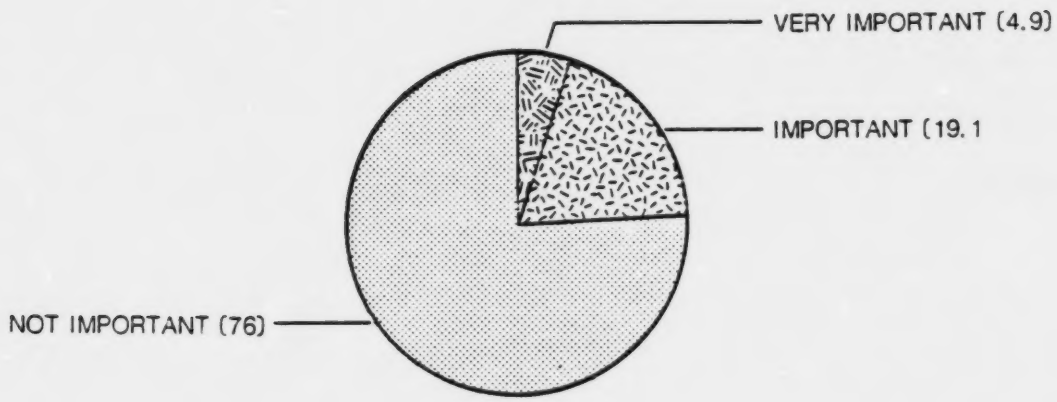


Figure 4-6
IMPORTANCE OF ESCAPE FROM WORK OR HOUSEHOLD ROUTINE



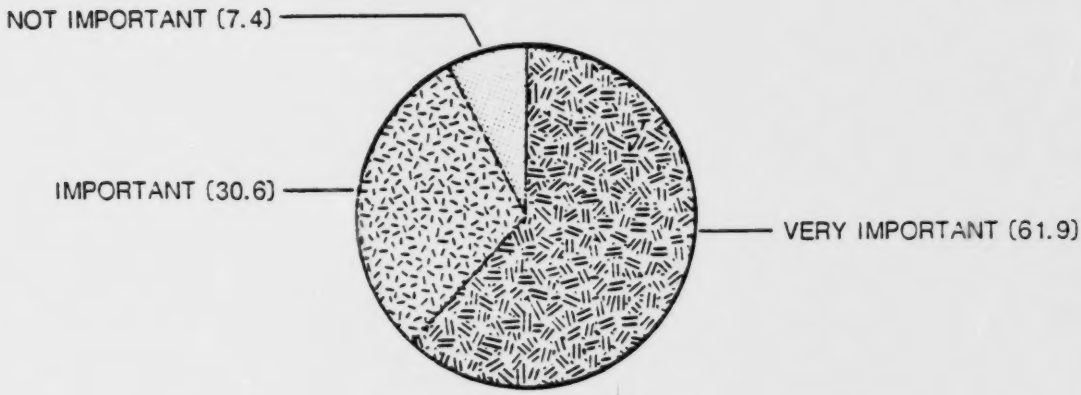
REGION OF RESIDENCE	% VERY IMPORTANT and IMPORTANT
Vancouver Island	73.6
Lower Mainland	77.2
Thompson - Nicola	76.1
Kootenay	78.7
Cariboo	74.6
Skeena	76.2
Omineca	79.3
Okanagan	74.5
Peace	83.6
Canadian Nonres.	81.8
Alien Nonres.	76.2

Figure 4-7
IMPORTANCE OF CATCH AS A SOURCE OF FOOD
(Percent)



REGION OF RESIDENCE	% VERY IMPORTANT and IMPORTANT
Vancouver Island	23.8
Lower Mainland	19.5
Thompson - Nicola	23.9
Kootenay	28.3
Cariboo	29.3
Skeena	29.2
Omineca	24.5
Okanagan	28.4
Peace	42.6
Canadian Nonres.	18.6
Alien Nonres.	22.8

Figure 4-8
IMPORTANCE OF QUALITY OF WATER
(Percent)



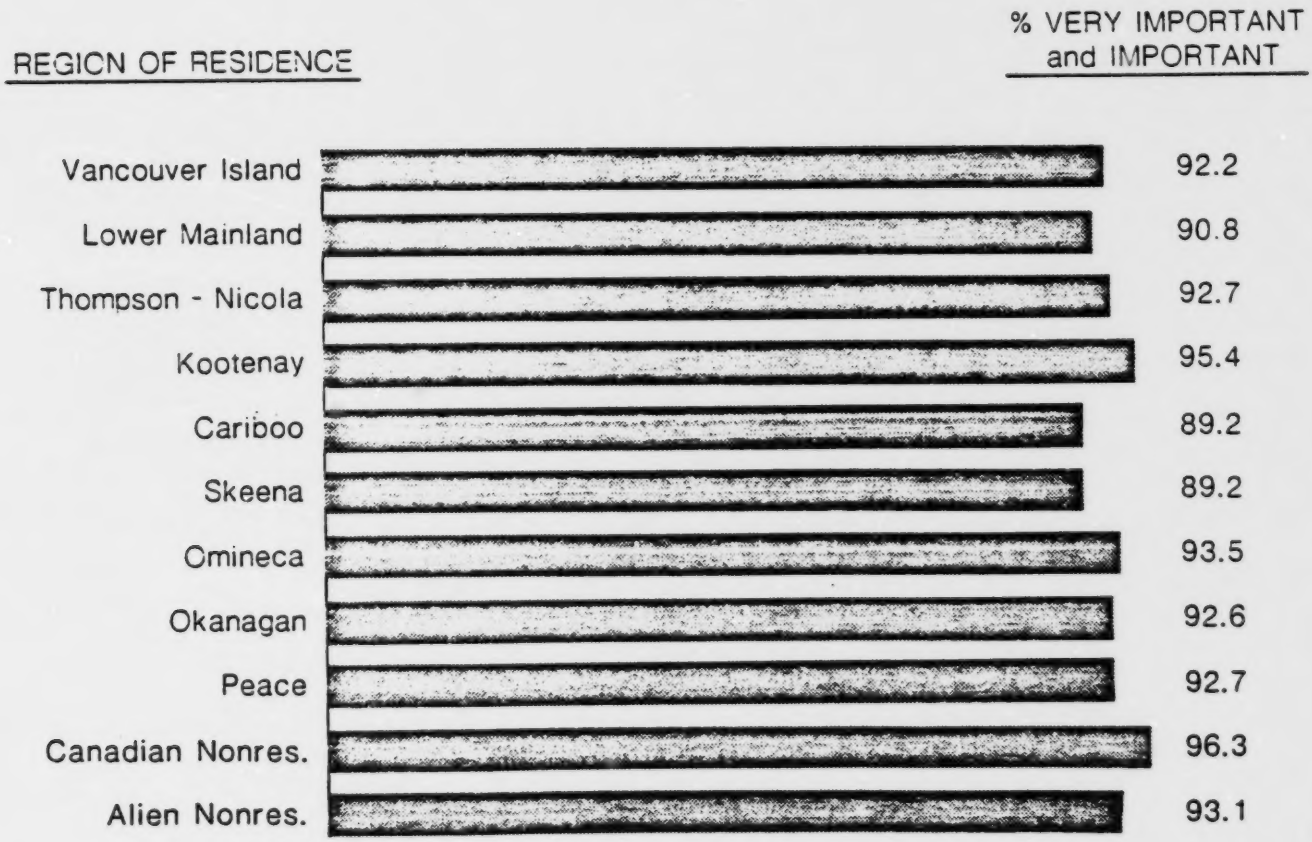
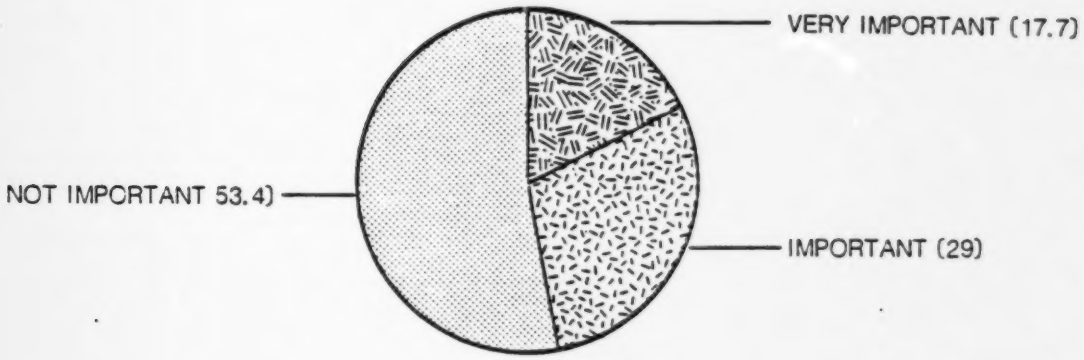
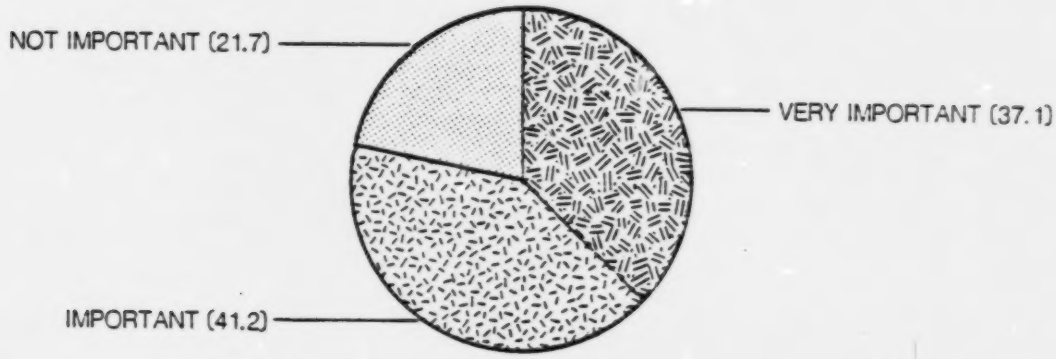


Figure 4-9
IMPORTANCE OF ANGLING FOR WILD (not hatchery) FISH
(Percent)



REGION OF RESIDENCE	% VERY IMPORTANT and IMPORTANT
Vancouver Island	44.2
Lower Mainland	43.4
Thompson - Nicola	44.7
Kootenay	45.7
Cariboo	35.5
Skeena	45.9
Omineca	43.9
Okanagan	33.5
Peace	44.9
Canadian Nonres.	53.4
Alien Nonres.	69.5

Figure 4-10
IMPORTANCE OF ACCESS TO WILDERNESS
(Percent)



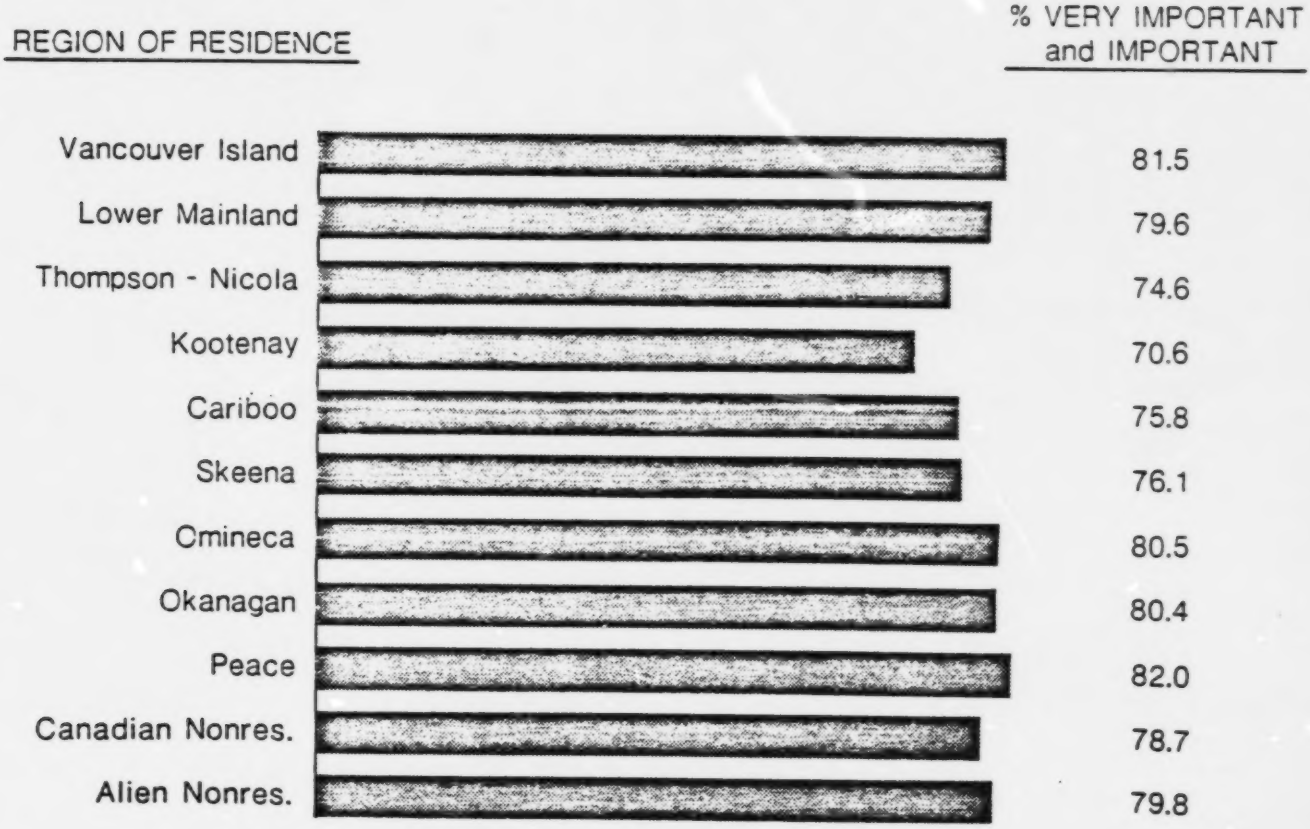
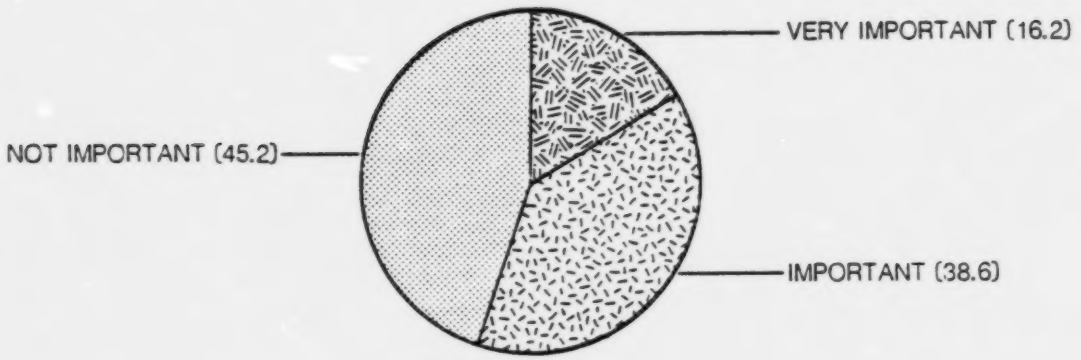


Figure 4-11
IMPORTANCE OF CATCHING THE DESIRED SPECIES
(Percent)



REGION OF RESIDENCE	% VERY IMPORTANT and IMPORTANT
Vancouver Island	48.8
Lower Mainland	49.4
Thompson - Nicola	55.9
Kootenay	60.5
Cariboo	43.7
Skeena	52.3
Cmineca	61.3
Okanagan	58.4
Peace	61.7
Canadian Nonres.	55.1
Alien Nonres.	62.2

Figure 4-12
A COMPARISON OF FACTOR IMPORTANCE

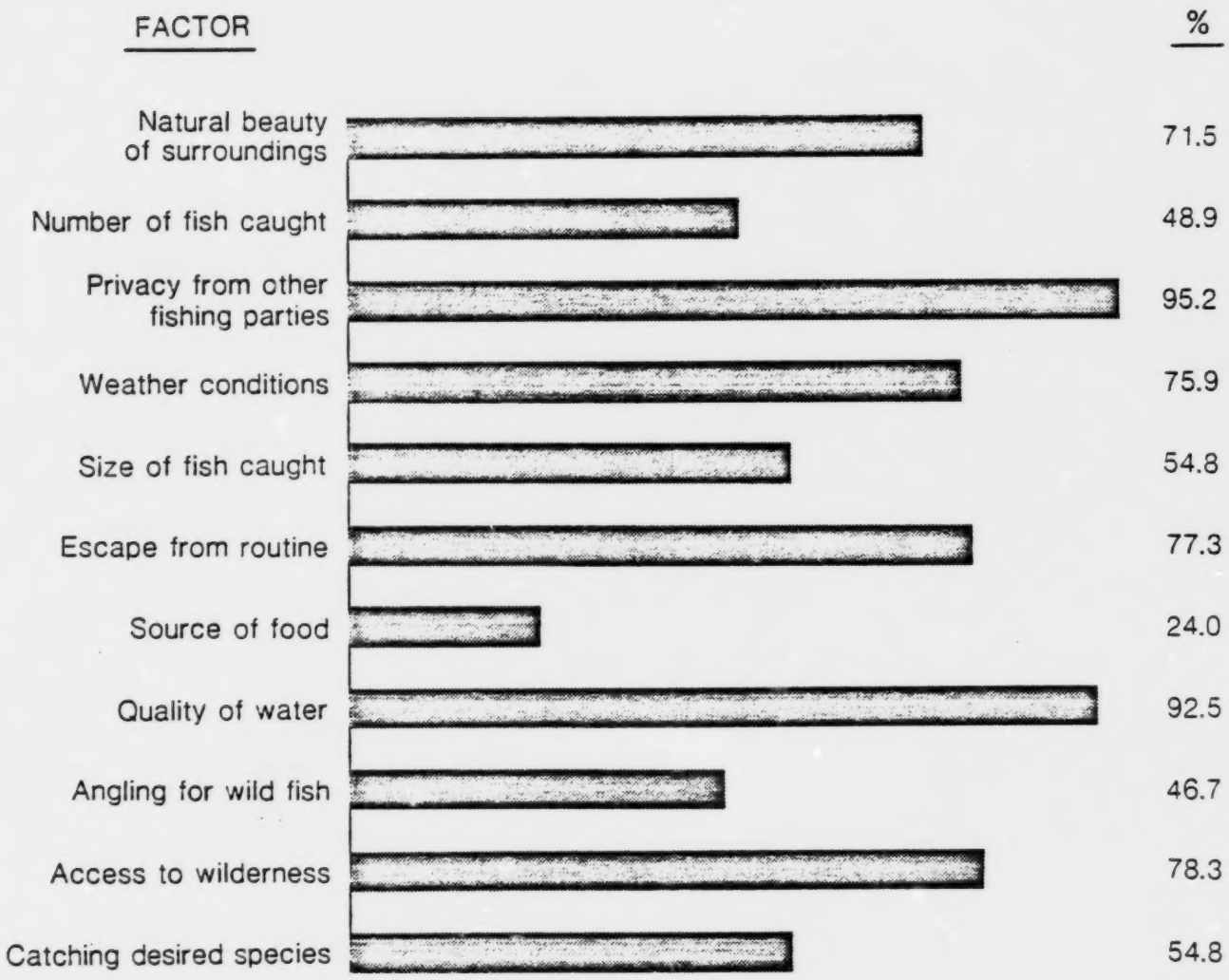


TABLE 4-1

FACTORS WHICH EFFECT THE ENJOYMENT OF SPORT FISHING, 1985

FACTOR	VERY IMPORTANT %	IMPORTANT %	NOT IMPORTANT %	TOTAL VERY IMPORTANT PLUS IMPORTANT %	RANK
Privacy From Other Fishing Parties	30.3	41.2	28.5	71.5	6
Number of Fish Caught	10.6	38.3	51.1	48.9	9
Natural Beauty of Surroundings	60.5	34.7	4.8	95.2	1
Weather Conditions	29.4	46.5	24.1	75.9	5
Size of Fisn Caught	12.7	42.1	45.1	54.8	8
Escape From Routine	48.2	29.1	22.8	77.3	4
Source of Food	4.9	19.1	76.0	24.0	11
Quality of Water	61.9	30.6	7.4	92.5	2
Angling for Wild Fish	17.7	29.0	53.4	46.7	10
Access to Wilderness	37.1	41.2	21.7	78.3	3
Catching Desired Species	16.2	38.6	45.2	54.8	7

are given in the last column of Table 4-1. The list of factors can be grouped into three categories: Environment Related Factors which contain natural beauty of surroundings, quality of water and weather condition; Life Style Factors which contain access to wilderness, escape from routine and privacy from other fishing parties; and Catch Related Factors which contains number of fish caught, size of fish, catching desired species, fishing for wild fish and catch as a source of food. The environment related factors were clearly the most important ranking first, second and fifth. The life style factors were next, ranking third, fourth and sixth; while the catch related factors were last ranking seventh through eleventh. These findings suggest that if the perceived quality of our freshwater sport fishery is to be maintained, then the preservation of a natural and unpolluted environment is of primary importance. Of the catch related factors, the ability to catch the desired species was ranked the highest. As shown in Chapter Three, rainbow trout was the most preferred species; thus, its continued abundance should be considered a priority of fisheries management in British Columbia.

CHAPTER FIVE
CHARACTERISTICS OF FRESHWATER ANGLERS

5.1 AGE AND SEX

As shown in Figure 5-1 freshwater angling was a predominantly male sport for both resident and nonresident active anglers with 80% of all active anglers being male. In comparison the general B.C. population was 50.3% female in 1985 (Central Statistics Bureau, 1985). The estimated distribution of active anglers by age class is given in Table 5-1 and Figure 5-2, which shows that alien nonresident anglers are on average almost seven years older than resident anglers. Canadian nonresident anglers on the other hand were slightly younger than resident anglers. Within B.C. the residents of the three northern regions had the youngest average age. The average age for all active licenced anglers is 43.2 years, as compared to the average age of the general B.C. population over 15 years of 42.2 years. Figure 5-3 compares the age distribution of active resident anglers to the age distribution of the general B.C. population over 15 years of age, which shows that anglers are underrepresented in the under 25 and 65 and over age groups and overrepresented in the 26 to 64 age groups.

5.2 RESIDENT ANGLER CHARACTERISTICS

Active resident anglers comprised approximately 10.7% of the general B.C. population over 15 years of age. The variations in the participation rate by region of residence are shown in Figure 5-4. The Cariboo's residents had the highest participation rate which was over five times larger than the residents of Vancouver Island who had the lowest. The low participation rates of Vancouver Island and Lower Mainland residents is probably due to a combination of a highly urbanized population coupled with the ready availability of a close substitute, namely saltwater fishing. For example, Table 2-12 showed that 76.6% of active anglers from Vancouver Island and 48.5% of Lower Mainland anglers also fished in tidal waters. The average participation rate for resident anglers living outside these two regions was only 18.7%.

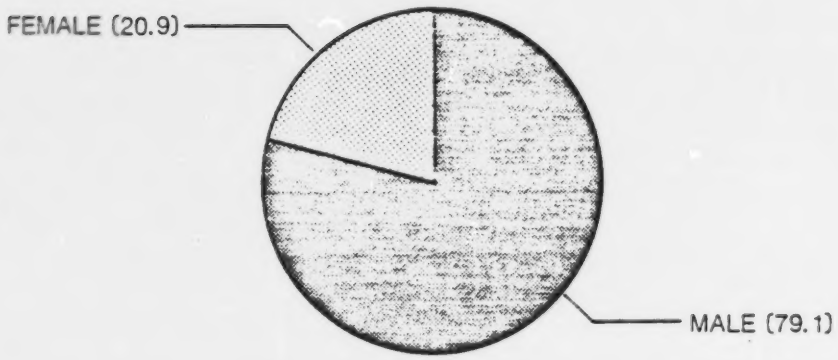
As angling is a predominantly male activity, it would be useful to show the participation rate of resident males over 15 years of age by region of residence as is done in Figure 5-5. Provincially, 17.3% of all men, or almost one in every five, were active anglers during 1985. Outside of the Lower Mainland and Vancouver Island regions, the average participation was substantially higher reaching a maximum of 44% in the Cariboo.

The survey asked resident anglers if they had fished in B.C.'s fresh waters in the previous five years. The results are reported by region of residence in Table 5-2. The results suggest that freshwater angling has a high retention rate of participants. The region with the highest retention was the Kootenay, while the Lower Mainland had the lowest.

Anglers were also asked about their angling activities, both in fresh water and salt water, in fisheries outside of B.C. during 1985. The results, reported in Table 5-3, show that active anglers fished an additional 143 thousand angler days outside of B.C. The four most popular

Figure 5-1
SEX OF ACTIVE ANGLERS, 1985

A - RESIDENTS
(% of 242,701 anglers)



B - NONRESIDENTS
(% of 71,561 anglers)

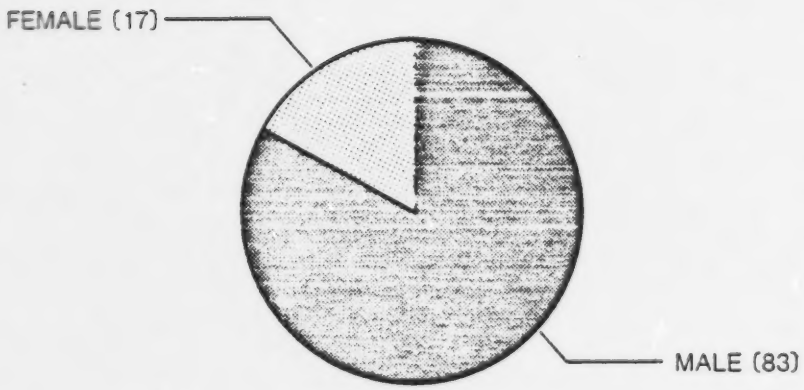
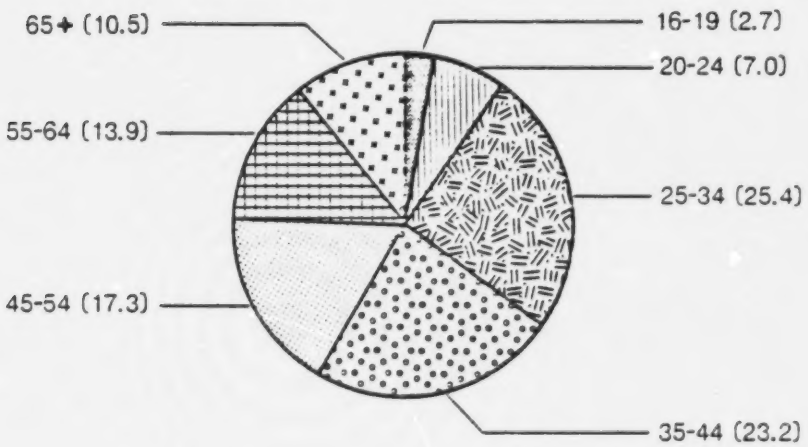


TABLE 5-1
ESTIMATED DISTRIBUTION OF ACTIVE ANGLERS BY AGE CLASS, 1985

REGION OF RESIDENCE	PERCENT IN AGE CLASS							AVERAGE AGE
	< 20	20-24	25-34	35-44	45-54	55-64	65+	
Vancouver Island	3.9	7.2	24.6	23.5	15.0	14.2	11.6	42.7
Lower Mainland	2.0	2.0	26.5	21.2	18.3	12.2	11.9	42.6
Thompson-Nicola	1.4	6.9	21.9	24.1	18.6	16.6	10.5	44.1
Kootenay	2.5	7.1	22.2	22.8	14.8	21.2	9.3	43.8
Cariboo	4.0	6.3	25.0	26.0	18.7	11.8	8.1	41.3
Skeena	1.8	8.8	32.7	27.8	15.4	9.5	4.1	38.7
Omineca	3.6	4.6	28.0	28.6	19.3	9.2	6.7	40.7
Okanagan	3.4	5.1	20.0	20.8	17.9	17.6	15.2	45.7
Peace	5.5	7.9	39.8	25.1	12.3	6.3	3.0	36.3
B.C. Residents	2.7	7.0	25.4	23.2	17.3	13.9	10.5	42.6
Canadian Nonres.	2.8	6.5	30.5	21.1	17.4	16.2	5.5	41.1
Alien Nonres.	2.3	1.6	13.9	21.9	19.9	21.4	19.0	49.2
All Nonresidents	2.6	4.1	22.2	21.5	18.6	18.8	12.2	45.1
All Anglers	2.7	6.3	24.7	22.8	17.6	15.0	10.9	43.2

Figure 5-2
AGE DISTRIBUTION OF ACTIVE ANGLERS, 1985

A - RESIDENTS
(% of 242,701 anglers)



B - NONRESIDENTS
(% of 71,561 anglers)

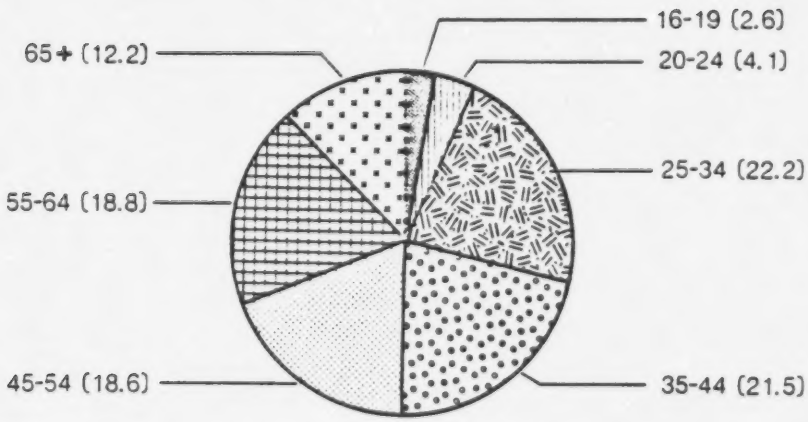


Figure 5-3

A COMPARISON OF THE AGE DISTRIBUTION OF ACTIVE RESIDENT ANGLERS TO THE B.C. GENERAL POPULATION OVER 15 YEARS OF AGE, 1985

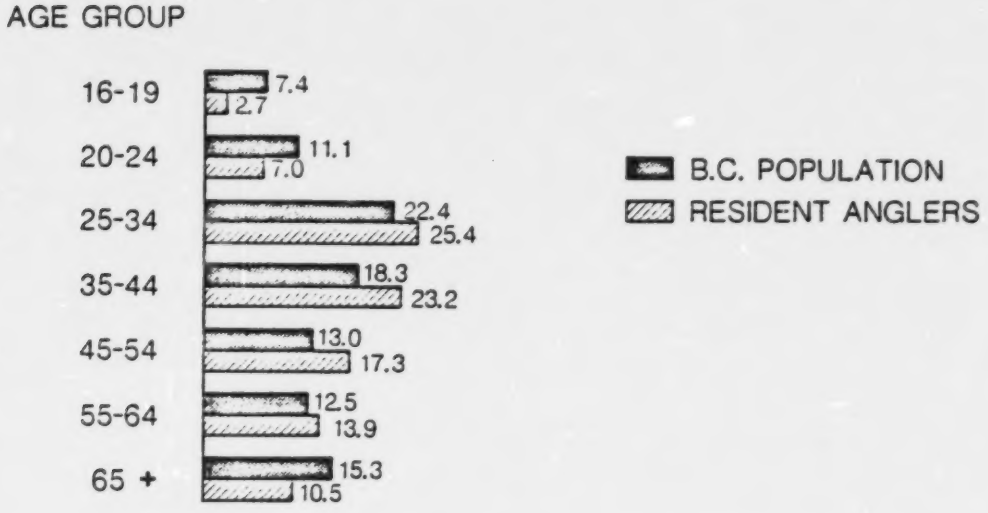


Figure 5-4

RESIDENT PARTICIPATION RATE BY REGION OF RESIDENCE, 1985

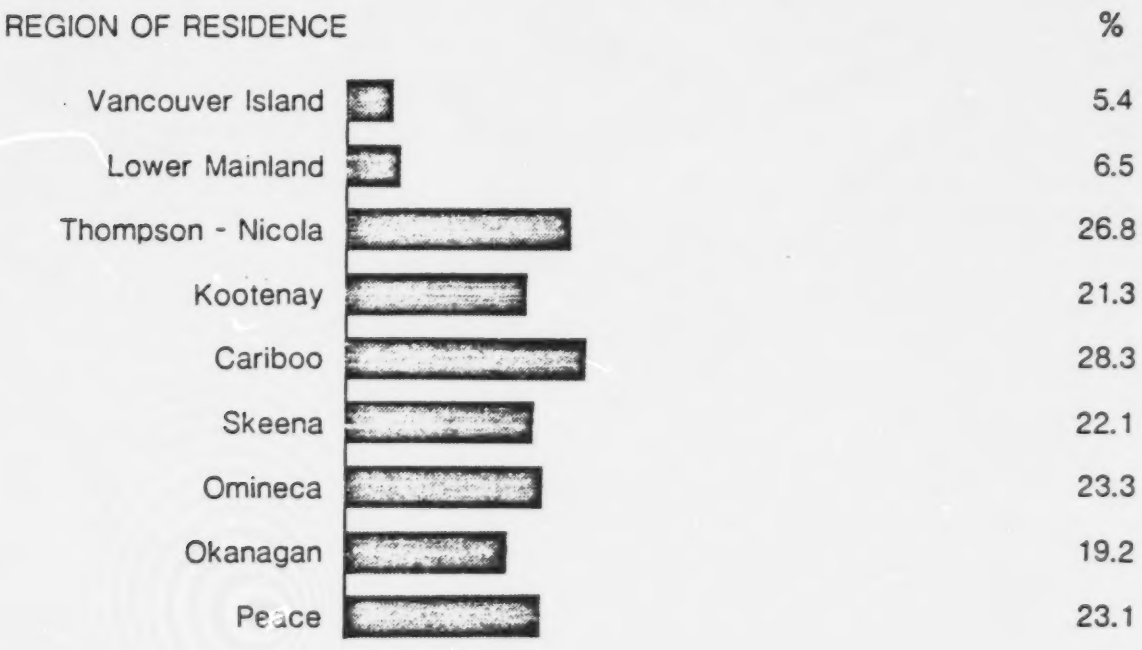


Figure 5-5
MALE RESIDENT PARTICIPATION RATE BY REGION OF RESIDENCE, 1985

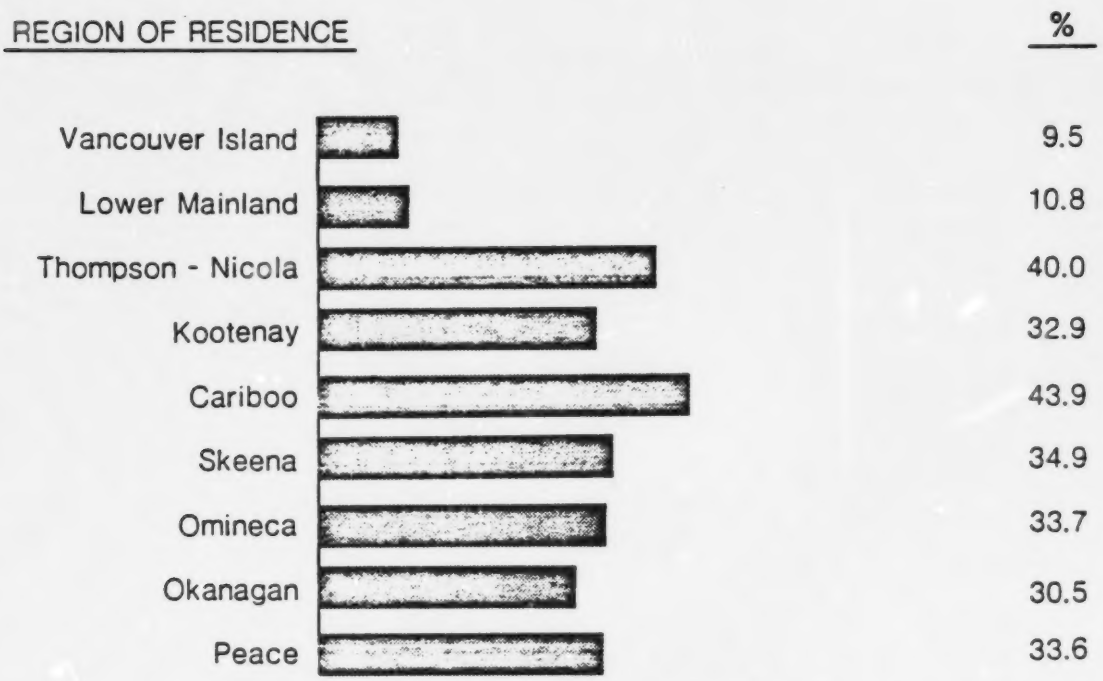


Figure 5-6
RESIDENT ANGLERS' MAIN REASON FOR FISHING OUTSIDE B.C.
(Percent)

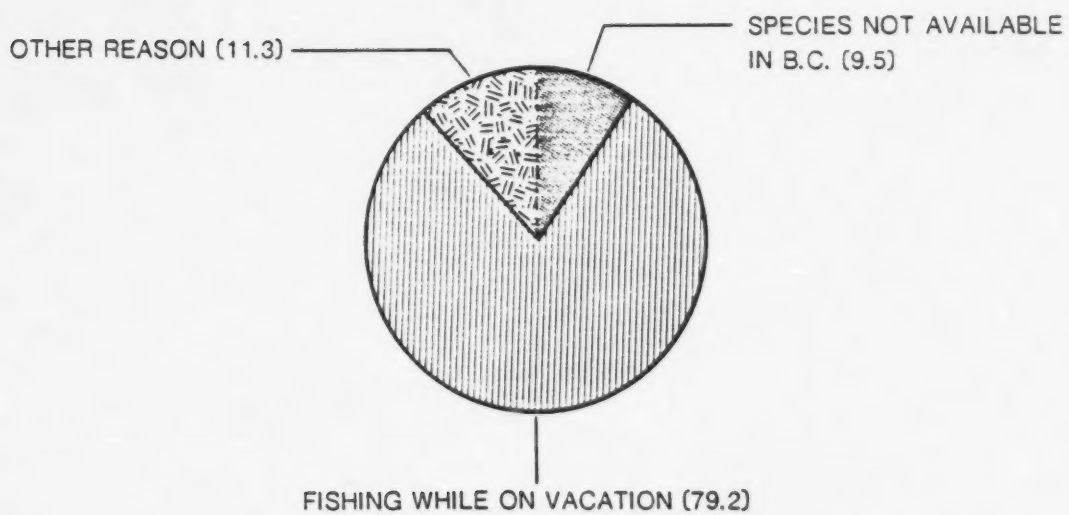


TABLE 5-2

ESTIMATED NUMBER OF ACTIVE RESIDENT ANGLERS WHO FISHED DURING THE PREVIOUS FIVE YEARS, 1985

REGION OF RESIDENCE	ACTIVE IN YEAR				
	1984	1983	1982	1981	1980
Vancouver Island	17,426	16,553	15,166	14,362	14,426
Lower Mainland	60,325	56,226	51,829	48,156	45,896
Thompson-Nicola	24,342	23,413	21,529	20,779	19,400
Kootenay	22,115	21,493	20,221	19,172	18,664
Cariboo	11,971	11,418	10,722	10,352	10,042
Skeena	12,781	11,802	10,994	10,614	9,904
Omineca	15,495	15,010	14,445	13,896	12,768
Okanagan	30,002	28,659	27,685	25,768	24,962
Peace	8,121	6,929	6,678	6,080	5,926
Total	202,578	191,503	179,269	169,180	161,989
	(83.5)	(78.9)	(73.9)	(69.7)	(66.7)

Note: Numbers in parentheses are percentages of 1985 active resident anglers fishing in the year indicated.

TABLE 5-3
DAYS SPENT FISHING OUTSIDE BRITISH COLUMBIA BY ACTIVE RESIDENT ANGLERS, 1985

PLACE FISHED	ANGLER DAYS	PERCENT OF TOTAL ANGLER DAYS OUTSIDE B.C.
Newfoundland	4,800	3.8
P.E.I.	100	< 0.1
Nova Scotia	1,000	0.8
New Brunswick	800	0.6
Quebec	1,100	0.9
Ontario	8,700	6.9
Manitoba	1,400	1.1
Saskatchewan	10,900	8.7
Alberta	18,400	14.6
Yukon	50,500	40.1
N.W.T.	1,600	1.3
Total Canada	99,300	78.9
U.S.A.	19,100	15.2
Other Countries	7,400	5.9
Total	125,800	100.0

destinations were, in order: the Yukon, U.S.A., Alberta and Saskatchewan. Their main reasons for fishing outside of B.C. are given in Figure 5-6, which shows that fishing while on vacation accounted for most anglers.

A set of questions regarding anglers' participation in wildlife related activities was also included in the resident questionnaire. The results, reported in Table 5-4, show that over two thirds of active anglers partook in some form of wildlife related activity. One third of active anglers hunted in 1985, with hunting of big game being the most popular of the hunting categories. However, non-consumptive wildlife activities were even more popular with over half of active anglers participating. Nature photography was the most popular of all wildlife related activities. In general, hunting was more popular in the less urbanized regions, while non-consumptive activities were more popular with the urbanized regions.

5.3 NONRESIDENT ANGLER CHARACTERISTICS

Nonresident anglers were asked to rate their freshwater fishing in B.C. during 1985 as excellent, very good, good, fair or poor. The results given in Figure 5-7 shows that roughly one third rated it as poor or fair, one third as good and one third as excellent or very good. Asked if they plan to return to B.C. to fish at some time in the future almost 95% said yes as shown in Figure 5-8. Nonresident anglers were asked, if there had been no fishing opportunities available in B.C. during 1985, would they have substituted other activities while in B.C., stayed a shorter time, or not come at all. The results, given in Figure 5-9, show that one half would have found other activities, one third would not have come at all, and one sixth would have reduced their length of stay in British Columbia.

Nonresident anglers were also asked if they had fished outside of B.C. during 1985 and, if so, how many days had they fished in other Canadian provinces and territories, in the U.S.A. and in other countries. Of active nonresident anglers 75.5% of them had fished outside of B.C. during 1985. As shown in Table 5-5, nonresidents fished a further 1.35 million angler days outside of B.C., as compared to the 472,900 angler days they spent in B.C. Thus, B.C. angler days accounted for over one quarter (25.9%) of all the days fished by active nonresident anglers. The average number of days fished by active nonresident anglers, both in and outside of B.C., was 23.5 angler days per angler for Canadian nonresidents, and 27.5 angler days per angler for Alien nonresidents. In comparison, active resident anglers fished on average 21.8 angler days, which include B.C. fresh water and salt water angling plus any angling outside of British Columbia.

Additional questions about nonresident anglers' visits to British Columbia were also included in the survey. The questions included how many days in total they spent in B.C., how many trips they made, how many of these trips were for fishing; and of the fishing trips to B.C., was fishing the main reason for coming to B.C., a secondary reason, or did they decide to fish after arriving. The results are presented in Table 5-6. Active nonresident anglers spent 1.23 million days in B.C. during 1985 of which over one third of them were angler days. Alien anglers spent a higher proportion of their total days in B.C. fishing than did Canadian nonresident anglers. All nonresident anglers made a total of almost a quarter of a million trips to B.C. during 1985 of which almost half of them were

TABLE 5-4

ACTIVE RESIDENT ANGLERS' PARTICIPATION IN WILDLIFE RELATED ACTIVITIES BY REGION OF RESIDENCE, 1985

(Percent)

REGION OF RESIDENCE	ANY WILDLIFE ACTIVITY	HUNTING BIG GAME	HUNTING SMALL GAME	HUNTING BIRDS/ WATERFOWL	TOTAL HUNTING	NATURE PHOTOGRAPHY	BIRD WATCHING	FEEDING WILDLIFE	TOTAL NON-CONSUMPTIVE ACTIVITIES
Vancouver Island	72.0	25.6	17.6	21.6	32.5	37.9	29.4	27.5	55.5
Lower Mainland	64.9	16.5	7.3	12.1	20.4	40.8	33.6	27.5	54.9
Thompson-Nicola	69.6	31.5	16.7	20.5	35.9	38.6	31.3	22.8	52.2
Kootenay	70.5	36.6	16.8	18.1	39.3	42.7	27.1	20.6	53.4
Cariboo	74.6	41.7	24.5	26.6	45.3	43.5	28.3	24.2	55.4
Skeena	71.6	31.8	14.3	21.0	38.0	45.5	25.3	15.3	55.2
Omineca	73.0	38.9	17.0	23.8	43.3	43.1	27.4	11.8	50.4
Okanagan	68.9	27.1	15.2	17.4	33.8	39.5	31.9	22.1	51.7
Peace	74.4	41.6	20.2	20.2	45.1	40.5	27.6	23.7	54.6
All Resident Anglers	69.1	27.5	13.9	17.8	32.1	40.9	30.5	23.3	53.8

Figure 5-7
NONRESIDENT ANGLERS' RATING OF FISHING IN B.C.
(% of 71,561 anglers)

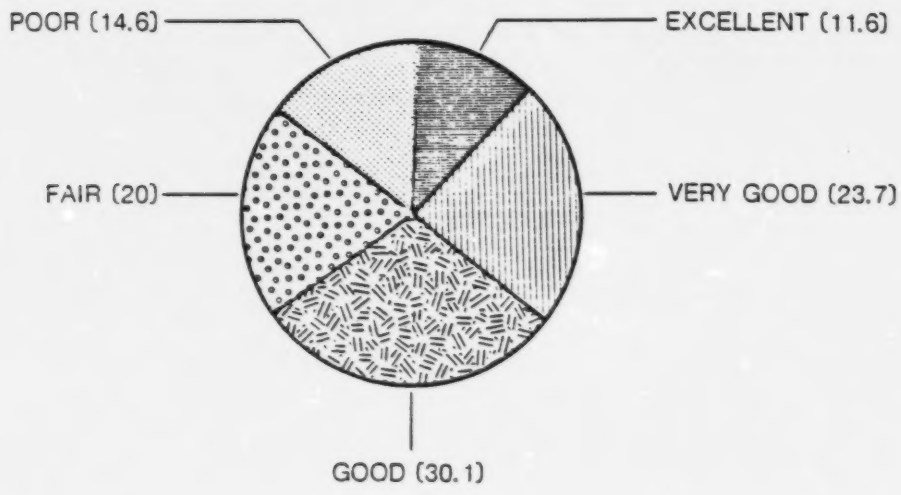


Figure 5-8
NONRESIDENT ANGLERS' PLANS TO FISH IN B.C. IN FUTURE
(% of 71,561 anglers)

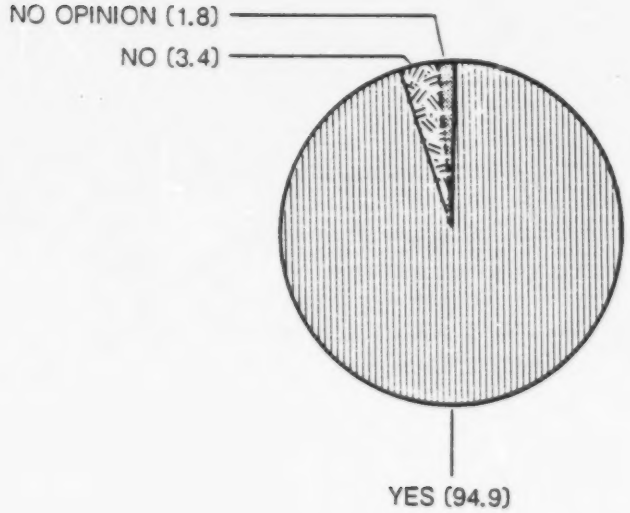


Figure 5-9
NONRESIDENT ANGLERS' ACTION IF NO FISHING OPPORTUNITIES IN B.C.
(% of 71,561 anglers)

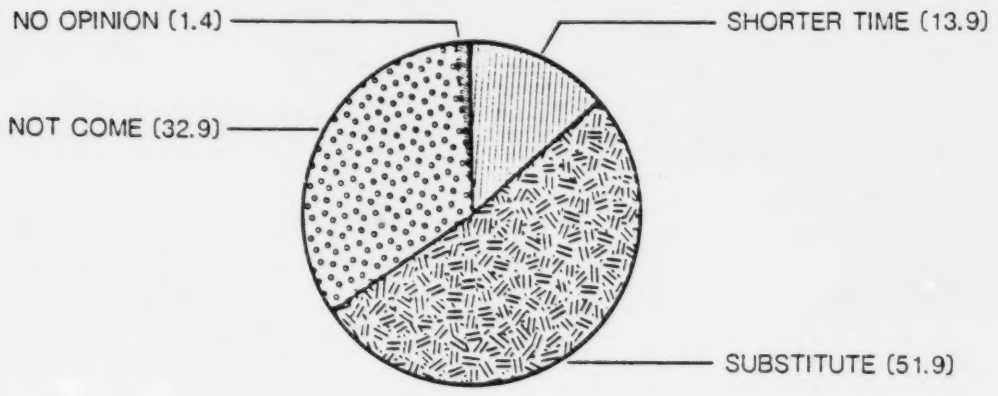


TABLE 5-5
DAYS SPENT FISHING OUTSIDE BRITISH COLUMBIA BY
ACTIVE NONRESIDENT ANGLERS, 1985

PLACE FISHED OUTSIDE B.C.	CANADIAN NONRESIDENTS	ALIEN NONRESIDENTS	TOTAL
Canada	578,600	23,500	602,100
U.S.A.	17,400	711,200	728,600
Other Country	1,400	19,400	20,800
TOTAL	597,400	754,100	1,351,500

TABLE 5-6

ACTIVE NONRESIDENT ANGLER TRIPS TO BRITISH COLUMBIA INFORMATION, 1985

LICENCE TYPE	TOTAL DAYS SPENT IN B.C.	TOTAL ANGLER DAYS IN B.C.	%	TOTAL TRIPS TO B.C.	TOTAL FISHING TRIPS TO B.C.	%	FISHING AS THE REASON FOR THE FISHING TRIP		
							MAIN REASON (%)	SECONDARY REASON (%)	DECIDED AFTER ARRIVAL (%)
Canadian Nonresident Annual	503,600	182,600	36.3	110,300	51,400	46.6	49.0	41.4	9.6
Canadian Nonresident 6-Day	234,900	60,500	25.8	35,500	17,800	50.1	35.6	36.4	28.0
Total Canadian Nonresidents	738,500	243,100	32.9	145,500	69,200	47.6	45.5	40.1	14.3
Alien Nonresident Annual	261,200	128,700	49.3	51,000	21,600	42.4	74.2	21.4	4.4
Alien Nonresident 6-Day	230,900	101,100	43.8	43,100	25,900	60.1	63.9	27.5	8.6
Total Alien Nonresident	492,100	229,800	46.7	94,100	47,500	50.5	68.6	24.7	6.7
Total All Nonresidents	1,230,600	472,900	38.4	239,900	116,700	48.6	54.9	33.9	11.2

fishing trips. The average length of a trip to B.C. was 5.1 days, and the average number of angler days per fishing trip was 4.1 angler days. For over half of the fishing trips made to B.C., fishing was the main reason for the trip. The proportion of fishing trips, for which fishing was the main reason for the trips, was significantly higher for Alien nonresidents tnan it was for Canadian nonresidents. Table 5-7 shows the type of accommodation used by active nonresident anglers while in B.C. during 1985.

TABLE 5-7

TYPE OF ACCOMMODATION USED BY ACTIVE NONRESIDENT ANGLERS, 1985

ACCOMMODATION TYPE	NUMBER OF NIGHTS IN BRITISH COLUMBIA BY			
	CANADIANS	ALIENS	TOTAL	%
Friends or Relatives	96,500	29,000	125,500	17.6
Tent or Trailer	62,000	58,100	120,000	16.8
Cottages Owned	42,600	26,900	69,500	9.8
Provincial Parks	27,700	40,700	68,500	9.6
Crown Land Camping	16,800	22,600	39,400	5.5
Commercial Camping/Trailer Parks	36,800	54,900	91,700	12.9
Fishing Lodge/Camps	20,200	69,900	90,100	12.6
Other Commercial Lodging (motel, motel, rental cottage)	38,500	26,200	64,600	9.1
Other	32,800	10,300	43,100	6.0
Total	373,900	338,600	712,400	100.0

CHAPTER SIX
TRENDS IN FRESHWATER ANGLING

6.1 INTRODUCTION

The purpose of this chapter is to identify any trends that may have emerged in the freshwater sport fishery over the last twenty years. The next section examines the sales of both resident and nonresident basic angling licences in order to see how the angler population has changed. Potential factors which may effect licence sales are also reviewed. Section 6.3 uses the results of two previous national surveys and two provincial surveys to examine changes in the number of active anglers, angler days, total catch and total harvest. The changes in average angler days per active angler and catch per angler day are also reviewed. Finally, Section 6.4 examines changes in the geographical location of fishing effort within the province to see where and why fishing pressure are growing at different rates.

6.2 TRENDS IN FRESHWATER LICENSED ANGLERS

The sales of basic resident and nonresident angling licences over the last twenty years are given in Figure 6-1 and Table 6-1. The number of licensed anglers increased steadily over the period 1967/68 to 1981/82, increasing from slightly over 1/4 million anglers to almost 1/2 million. Starting in 1982/83, licence sales declined until 1985/86 when they totalled 360,169 licences. However, in 1986/87, this trend was reversed with sales increasing by almost 15,000 licences. Initial returns for the first quarter of 1987/88 indicate that further increases in licence sales are likely. A list of factors which would effect the sale of angling licences would include the price of the licence, the population size of potential buyers, the population's income level, the availability of substitute recreation opportunities, the quality of the fishery and any changes in society's tastes and preferences. An earlier study attempted to empirically estimate the effect price, income and population level changes have on the sale of basic annual licences (Stone, 1985). The study showed that a 10% increase in licence fees, all other factors held constant, would result in a 2.3% decrease in resident annual licence sales, a 4% decrease in Canadian annual licence sales, and a 7% decrease in alien annual licence sales. The same study also showed that licence sales were positively related to income and population levels. While the B.C. population grew by 4.1% over the period 1981-1984, real per capita income fell by 6.4%. This meant that the expected increases in licence sales due to population growth were offset by the decline in real income. Thus, the dramatic decline in licence sales which occurred in 1982/83 can be mainly attributed to the more than doubling of licence fees which occurred that year, coupled with the effects of the world recession which struck at the same time.

Table 6-2 records a major shift in the composition of nonresident licence sales. The proportion of Canadian nonresident anglers has increased from one fifth to over one half of all nonresident anglers. A major cause of this shift was the rapid growth in the population of Alberta which increased by over 60% or almost 1 million people during this period. As

Figure 6-1
TRENDS IN LICENCED ANGLERS

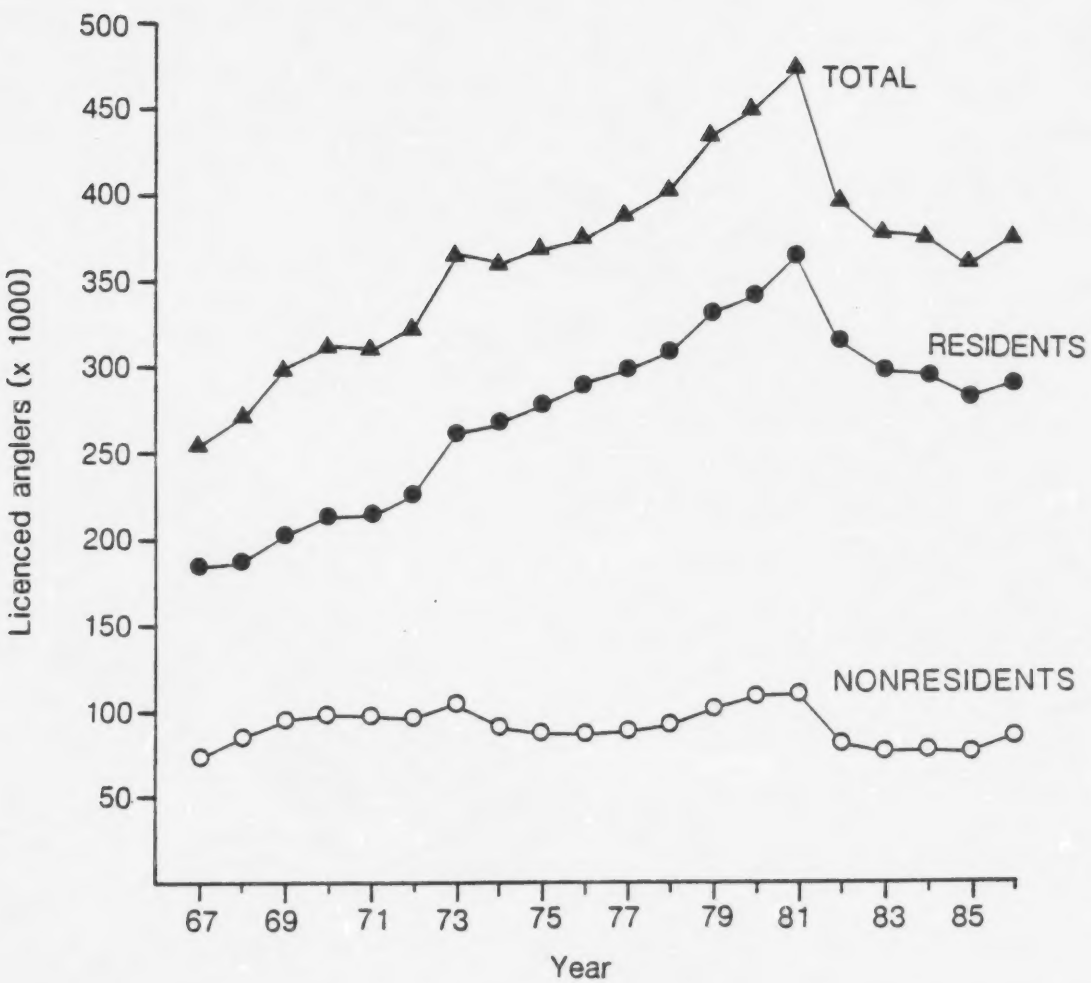


TABLE 6-1

RESIDENT AND NONRESIDENT LICENCED ANGLERS, 1967/68 TO 1986/87

FISHING SEASON	RESIDENTS	NON-RESIDENTS	TOTAL
67/68	183,964	73,125	257,089
68/69	186,744	84,865	271,609
69/70	203,376	95,760	299,136
70/71	213,184	98,312	311,496
71/72	214,066	97,804	311,870
72/73	225,148	96,949	322,097
73/74	262,397	105,139	367,536
74/75	269,561	91,132	360,693
75/76	280,745	88,608	369,353
76/77	290,030	87,014	377,044
77/78	299,688	89,817	389,505
78/79	310,047	92,702	402,749
79/80	332,436	102,797	435,233
80/81	341,125	109,200	450,325
81/82	365,503	109,778	475,281
82/83	315,378	80,935	396,313
83/84	299,671	77,614	377,285
84/85	295,638	78,576	374,214
85/86	282,939	77,200	360,139
86/87	290,728	84,043	374,771

Source: Recreational Fisheries Branch, B.C. Ministry of Environment and Parks.

TABLE 6-2

TRENDS IN NONRESIDENT BASIC LICENCE SALES, 1967/68 TO 1986/87

FISHING SEASON	NONRESIDENT LICENCES SALES			% CANADIANS
	CANADIANS	ALIENS	TOTAL	
67/68	15,115	58,010	73,125	20.7
68/69	21,954	62,911	84,865	25.9
69/70	22,662	73,098	95,760	23.7
70/71	24,162	74,150	98,312	24.6
71/72	26,251	71,553	97,804	26.8
72/73	28,228	68,721	96,949	29.1
73/74	32,985	72,154	105,139	31.4
74/75	39,133	51,999	91,132	42.9
75/76	38,706	49,902	88,608	43.7
76/77	40,066	46,948	87,014	46.0
77/78	41,884	47,933	89,817	46.6
78/79	44,387	48,315	92,702	47.9
79/80	51,258	51,513	102,797	49.9
80/81	56,527	52,673	109,200	51.8
81/82	57,247	52,531	109,778	52.1
82/83	38,977	41,958	80,935	48.2
83/84	37,033	40,581	77,614	47.7
84/85	39,464	39,112	78,576	50.2
85/86	38,830	38,370	77,200	50.3
86/87	43,648	40,395	84,043	51.9

Source: Recreational Fisheries Branch, B.C. Ministry of Environment and Parks.

noted in Chapter 2, Albertans comprise over 85% of all Canadian non-resident anglers.

6.3 TRENDS IN FRESHWATER ANGLING ACTIVITY

This section compares the results of the 1985 National Survey to those of the 1975 and 1980 National Surveys, plus those of two provincial surveys done for 1969 and 1981 (see Fish and Wildlife Branch 1979, Stone 1982, Pearse Bowden Economic Consultants Ltd. 1971 and Reid 1986, respectively). These surveys provide five data points over a seventeen year period from which to establish any trends. However, any comparisons between surveys must be done with some caution as all had different questionnaires, sample sizes and response rates. For a discussion of the potential biases inherent in survey work, see Reid (1986, Section 1.4). The results of the five surveys are summarized in Table 6-3.

The surveys show an increase in angling effort and catch up to 1981, followed by a major drop in activity levels. This pattern has naturally followed that of licence sales reported in the previous section. However, there has been signficant changes in average participation and catch rates. For example, the average number of angler days per angler increased by 25% over the decade of the seventies but has remained virtually unchanged, especially for resident anglers, during the eighties. In contrast, catch per angler day nas been declining, down 26% or 0.71 fish per day since 1969. The decline in average catch per day had been more than offset up to 1981 by the increase in the average angler days per angler to keep the average annual catch per angler increasing. However, after 1981, the average angler days per angler levelled off, while catch per day continued to decline resulting in the decline of average annual catch per angler. Total harvest as a percentage of total catch has also declined since 1980, down from 72% to 62% in 1985. One possible reason for this drop may be the increase of catch and release fishing, both as a management tool and as an angler ethic. For example, the wild steelhead fisheries of the Vancouver Island and Lower Mainland regions were both made catch-and-release fisheries starting in 1977.

6.4 GEOGRAPHICAL SHIFTS IN ANGLING EFFORT

The distribution of angling effort throughout the province has not remained constant over time. While all regions, except Vancouver Island, have had absolute increases in total angler days, some regions have experienced higher growth rates. Table 6-4 shows the percentage distribution of total angler days to the region fished for four of the five survey years. Unfortunately, the 1975 National Survey did not include questions on where tha anglers fished within the province. In addition, the results for the Skeena, Omineca and Peace regions have been combined into a Northern region total in order for the 1980, 1981 and 1985 survey results to be compatible with the 1969 survey results.

The Cariboo region has had the largest increase in the proportion of total provincial angling effort which has more than doubled since 1969. While most of the increase has been generated by residents of the region, a substantial portion has come from residents of the Lower Mainland. In 1969, residents of the Lower Mainland spent 29,000 angler days in the Cariboo, as compared to almost 160,000 in 1985. The Northern region has also had a

TABLE 6-3
TRENDS IN FRESHWATER ANGLING ACTIVITY

CHANGES IN:	YEAR 1969[1]	1975[2]	1980[3]	1981[4]	1985
ACTIVE ANGLERS					
Residents	182,100	255,782	261,100	323,961	242,701
Nonresidents	95,780	83,479	95,400	102,215	71,561
Total	277,880	339,261	356,500	426,176	314,262
ANGLER DAYS					
Residents	2,730,600	4,896,454	4,551,400	5,677,200	4,281,100
Nonresidents	477,800	563,552	662,400	814,200	472,900
Total	3,208,400	5,460,006	5,213,800	6,491,400	4,754,000
ANGLER DAYS PER ANGLER					
Residents	15.0	15.8	17.4	17.5	17.6
Nonresidents	5.0	6.3	6.9	8.0	6.6
Total	11.6	13.5	14.6	15.2	15.1
TOTAL CATCH					
Residents	6,427,000	n.a.	9,332,400	12,130,097	8,088,700
Nonresidents	2,215,000	n.a.	1,838,700	2,333,564	1,306,800
Total	8,642,000	n.a.	11,171,000	14,463,611	9,395,500
TOTAL HARVEST					
Residents	n.a.	5,781,354	6,758,370	8,816,552	5,135,800
Nonresidents	n.a.	1,012,778	1,228,850	1,549,585	679,900
Total	n.a.	6,794,135	7,987,220	10,366,137	5,815,400
CATCH PER ANGLER DAY					
Residents	2.35	n.a.	2.05	2.14	1.89
Nonresidents	4.64	n.a.	2.78	2.87	2.76
Total	2.69	n.a.	2.14	2.23	1.98
CATCH PER ANGLER					
Residents	35.3	n.a.	35.7	37.4	33.3
Nonresidents	23.1	n.a.	19.3	22.8	18.3
Total	31.1	n.a.	31.3	33.9	29.9

Source: [1] Pearse Bowden Economic Consultants Ltd., 1971
[2] Fish and Wildlife Branch, 1979
[3] Stone, 1982
[4] Reid, 1986

TABLE 6-4

GEOGRAPHICAL SHIFTS IN ANGLING EFFORT

REGION FISHED	1969[1]		1980[2]		1981[3]		1985[4]	
	Days	%	Days	%	Days	%	Days	%
Vancouver Island	468,200	14.6	507,900	9.8	900,300	13.9	466,800	9.8
Lower Mainland	473,100	14.7	613,900	11.8	518,500	8.0	549,400	11.6
Thompson-Nicola	780,200	24.3	881,300	16.9	1,309,200	20.2	987,700	20.8
Kootenay	455,400	14.2	943,900	18.1	974,500	15.0	707,300	14.9
Cariboo	165,000	5.1	595,100	11.4	772,800	11.9	526,100	11.1
Northern	495,500	15.4	1,040,100	19.9	1,221,100	18.8	925,300	19.4
Okanagan	371,000	11.6	631,600	12.1	795,000	12.2	591,400	12.4
TOTAL	3,208,400	100.0	5,213,800	100.0	6,491,400	100.0	4,754,000	100.0

Source: [1] Pearse Bowden Economic Consultants Ltd., 1971.

[2] Stone, 1982.

[3] Reid, 1986.

[4] 1985 National Survey of Sport Fishery.

substantial increase in its share of angling effort. As with the Cariboo region, the Northern region's additional angling effort is coming from its own residents. However, the angler days spent in the Northern region by nonresidents has tripled since 1969. The Thompson-Nicola region, while still the region receiving the most angler days, has seen a decline in its share of total provincial effort. The Vancouver Island and Lower Mainland regions have also been losing their share of total effort.

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APPENDIX A
THE SURVEY DESIGN

A mail questionnaire was the survey method chosen to collect the data for the 1985 National Survey of Sport Fishing in Canada. In British Columbia, the survey sample was chosen by a random draw of licence foils from the basic freshwater angling licences sold during 1985. The sample of resident licence holders was stratified by the nine regions of residences shown in Figure 1-1. The stratification was done in order to ensure that valid results could be obtained for anglers living in each region. The sample size drawn is given in Table A-1 by region of residence, and in Table A-2 by basic angling licence type. As shown, 8,668 individuals were selected representing a sample rate of 2.4%. For a complete discussion of survey and sampling techniques plus the potential biases inherent in surveys, see Cochrane (1977).

The questionnaires were mailed out during the week of January 22, 1986. In order to ensure as high a response rate as possible was achieved, two follow-up mailings were used. The first was a reminder postcard, shown in Figure A-1, sent to the entire sample at the end of February, 1986 asking all anglers who had not yet responded to do so. In mid-April, a complete reminder questionnaire was sent to all anglers sampled for which a response had not yet been received. In addition, press releases both before and during the survey were issued, asking for the anglers' support in completing the questionnaires. As a result, 4,496 usable returns were received with a further 677 questionnaires returned as undeliverable for a response rate of 56.3%.

TABLE A-1

NUMBER OF ANGLING LICENCES, QUESTIONNAIRES AND RESPONDENTS, 1985

REGION OF RESIDENCE	LICENCED ANGLERS	QUESTIONNAIRES MAILED	SAMPLE RATE (%)	RESPONDENTS	UNDELIVERABLE	RESPONSE RATE (%)
Vancouver Island	27,870	864	3.1	481	71	60.6
Lower Mainland	92,289	1,308	1.4	651	138	55.6
Thompson-Nicola	31,035	739	2.4	406	66	60.3
Kootenay	28,411	752	2.6	402	48	57.1
Cariboo	15,261	662	4.3	329	36	52.6
Skeena	17,650	663	3.8	319	44	51.5
Omineca	20,611	645	3.1	317	61	54.3
Okanagan	38,234	692	1.8	376	57	59.2
Peace	11,569	620	5.4	270	50	47.4
Canadian Nonres.	38,875	846	2.2	418	64	53.5
Alien Nonres.	38,370	877	2.3	516	42	61.2
All Anglers	360,184	8,668	2.4	4,496	677	56.3

TABLE A-2

SAMPLE SIZE BY BASIC ANGLING LICENCE TYPE, 1985

LICENCE TYPE	LICENCED ANGLERS	SAMPLE SIZE	SAMPLE RATE (%)
B.C. Resident Annual	244,247	6,044	2.47
B.C. Resident Short Term	6,101	154	2.52
B.C. Resident Senior Citizen	32,591	747	2.29
Canadian Nonresident Annual	21,649	513	2.37
Canadian Nonresident Short Term	17,181	333	1.94
Alien Nonresident Annual	12,853	295	2.30
Alien Nonresident Short Term	25,517	582	2.28
TOTAL	360,139	8,668	2.41

FIGURE A-1

Fisheries and Oceans / Pêches et Océans

Dear Angler:

Just a few days ago, you should have received a questionnaire for the 1985 Survey of Sport-fishing in Canada asking about your fishing activities in 1985.
If you have already returned your completed questionnaire, please accept our thanks. If you have not, we would appreciate it if you would do so as soon as possible.

Only a small number of anglers have been selected to receive this questionnaire and a good response is necessary for both the success and accuracy of the survey. Please participate in planning fisheries management by taking a small amount of your time to provide us with your valuable information.

If by chance the questionnaire did not reach you or if it has been mislaid, we are planning to send out another one in a few weeks. Your response at that time would still be very much appreciated.

Thank you for your assistance.

IF YOU HAVE ANY QUESTIONS
ABOUT THE SURVEY
PLEASE CALL 1-800-267-9561
BETWEEN 9 A.M. AND 5 P.M.

Canada

APPENDIX B
RESIDENT ANGLER QUESTIONNAIRE

1985 SURVEY OF SPORTFISHING IN CANADA

RESIDENTS OF BRITISH COLUMBIA

FRESHWATER SPORTFISHING

Dear Angler:

The 1985 Survey of Sportfishing in Canada is the third in a series of surveys conducted every five years as a cooperative effort by all federal, provincial and territorial fisheries management agencies. The results of this survey will provide fisheries managers in British Columbia with valuable information about fishing activity, catch rates, expenditure patterns and other important management planning data. The survey also provides you with the opportunity to state your personal preferences and opinions as well as to provide comments on fisheries issues which are important to you. This questionnaire covers British Columbia FRESH WATER only.

Of the thousands of people who fished in British Columbia FRESH WATER in 1985, only a small number have been chosen to receive this questionnaire. Your response is critical to the accuracy of the information which will be used by your fisheries managers for developing policies and programs to safeguard fisheries resources for the future.

Please take a few minutes of your time to complete the questionnaire so that everyone will benefit from good management planning. Even if you did not fish or fished only a little, your answers are still very important.

THANK YOU IN ADVANCE FOR YOUR COOPERATION AND ASSISTANCE.

IF YOU HAVE ANY QUESTIONS RELATING TO THIS QUESTIONNAIRE, PLEASE CALL THE SURVEYS UNIT, DEPARTMENT OF FISHERIES AND OCEANS, OTTAWA, BETWEEN 9:00 A.M. AND 5:00 P.M. LOCAL TIME AT:

1 - 800 - 267-9561 (TOLL FREE)

NOTE: QUESTIONS REGARDING FISHERIES MANAGEMENT SHOULD BE DIRECTED TO THE NEAREST FISHERIES OFFICE.

CONFIDENTIAL WHEN COMPLETED

1. a) Did you personally fish for sport in British Columbia FRESH WATER in 1985?

   Yes ₁○→ go to Question 2.
   No ₂○→ complete b) and go to Question 6.

   b) If you did not fish, what was your main reason?

   _____

   _____

Canada

YOUR PERSONAL SPORTFISHING ACTIVITIES

) Please indicate the number of days you spent fishing for sport in FRESH WATER in British Columbia in each month of 1985. A "day" is all or any part of a day fished.

January - March _____ May _____ July _____ September _____

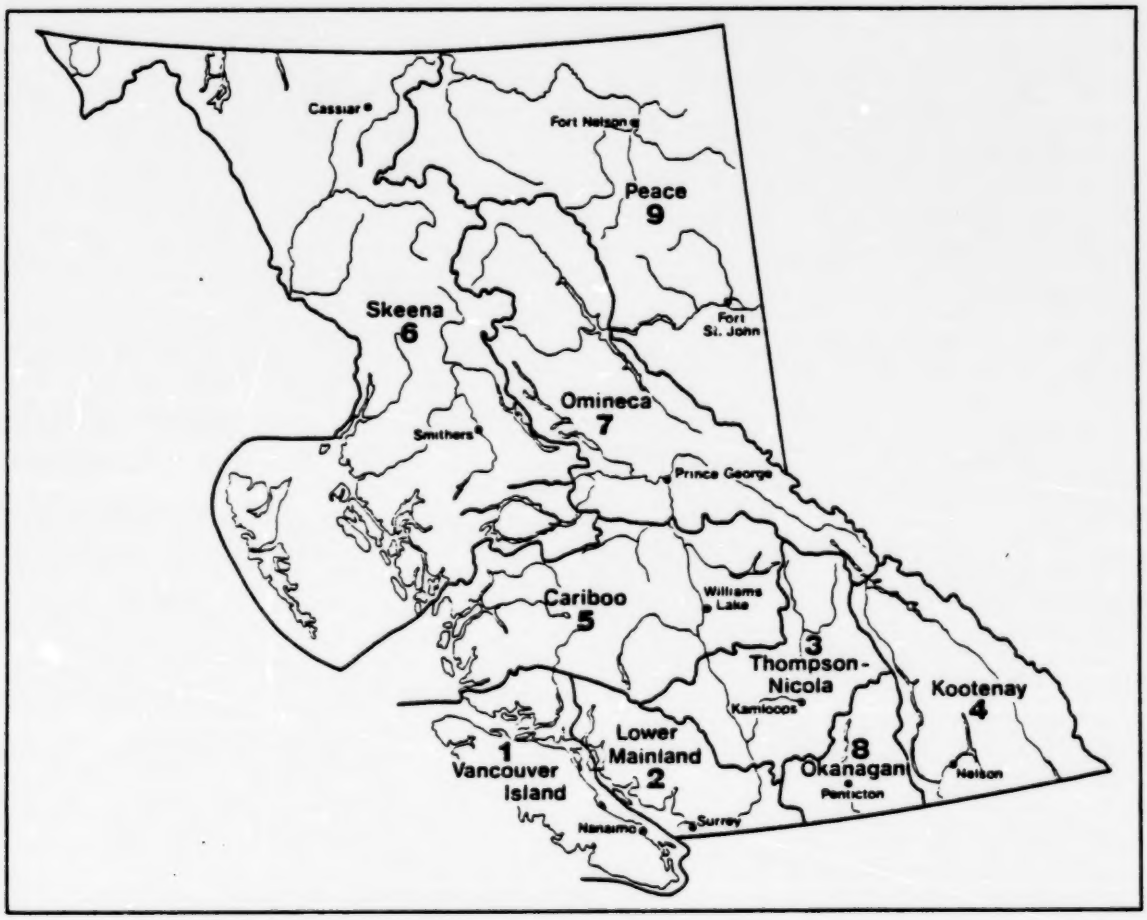
April _____ June _____ August _____ October - December _____

) Of the above days, how many were spent fishing through the ice for sport in British Columbia FRESH WATER in 1985?

None ○ or _____ days

) Of the total days you fished, how many were single day trips?

_____ trips



For 1985, we want to assess the fishing pressure on the lakes and rivers of the above fisheries regions. For those regions in which you fished, please indicate the number of days *you* devoted to fishing on lakes and on rivers or streams in 1985.

	Number of Days Fished			Number of Days Fished	
	Lakes	Rivers/Streams		Lakes	Rivers/Streams
Region 1	_____	_____	Region 6	_____	_____
Region 2	_____	_____	Region 7	_____	_____
Region 3	_____	_____	Region 8	_____	_____
Region 4	_____	_____	Region 9	_____	_____
Region 5	_____	_____			

4. For each region in which you caught FRESHWATER fish species in British Columbia in 1985, please tell us the total number of fish you kept. Please report your personal catch only.

(IF YOU CAUGHT NO FISH IN 1985, PLEASE CHECK (√) ₂O AND GO TO QUESTION 6).

	REGION 1		REGION 2		REGION 3		REGION 4		REGION 5		REGION 6		REGION 7		REGION 8		REGION 9	
	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
1. Rainbow trout																		
2. Cutthroat trout																		
3. Kokanee																		
4. Dolly Varden char																		
5. Other Char (Eastern Brook trout, Lake trout)																		
6. Other trout																		
7. Salmon (freshwater)																		
8. Northern pike																		
9. Walleye (pickerel)																		
10. Perch																		
11. Arctic grayling																		
12. Other fish																		

5. a) What was the total estimated weight of the fish you caught and kept in British Columbia FRESH WATER in 1985?

_____ pounds or _____ kilograms

b) Of the fish you kept, approximately what percentage was:

eaten by yourself or within your household? _____ %

given to others? _____ %

6. Of the freshwater species available in British Columbia, which three do you prefer to fish for?

First _____ Second _____ Third _____

7. a) Did you fish for sport outside of British Columbia in 1985?

Yes 1 O→ go to Question 7b) No 2 O→ go to Question 8

b) How many days did you spend fishing in areas outside of British Columbia in 1985?

Newfoundland	____	Ontario	____	Northwest Territories	____
Prince Edward Island	____	Manitoba	____	United States	____
Nova Scotia	____	Saskatchewan	____	Other Countries	____
New Brunswick	____	Alberta	____		
Quebec	____	Yukon Territory	____		

c) What was your main reason for fishing outside British Columbia in 1985?

Fished for species not available in British Columbia 1 O

Fished while on vacation, at the cottage, business trip, etc. 2 O

Other reasons 3 O

8. Please indicate if you fished in British Columbia FRESH WATER in any of the years below:

1984 1 O 1983 1 O 1982 1 O 1981 1 O 1980 1 O

9. How important is each of the following factors to your enjoyment of a day of sportfishing?

Factor	Very Important	Important	Not Important
Privacy from other fishing parties	1 O	2 O	3 O
Number of fish caught	1 O	2 O	3 O
Natural beauty of surroundings	1 O	2 O	3 O
Weather conditions	1 O	2 O	3 O
Size of fisn caught	1 O	2 O	3 O
Escape from work or household routine	1 O	2 O	3 O
Your catch as a source of food	1 O	2 O	3 O
Quality of water	1 O	2 O	3 O
Angling for wild (not hatchery) fish	1 O	2 O	3 O
Access to wilderness areas	1 O	2 O	3 O
Catching the species desired	1 O	2 O	3 O

10. In 1985, did you participate in any of the following wildlife related activities?

Hunting - big game	Yes 1 O	No 2 O
- small game	Yes 1 O	No 2 O
- game birds/waterfowl	Yes 1 O	No 2 O
Nature photography	Yes 1 O	No 2 O
Bird watching	Yes 1 O	No 2 O
Feeding wildlife	Yes 1 O	No 2 O

11. In 1985, were you a member of any of the following organizations?

British Columbia Wildlife Federation	Yes 1 O	No 2 O
Canadian Wildlife Federation	Yes 1 O	No 2 O
A local fish and game club, or association	Yes 1 O	No 2 O

EXPENDITURES ON SPORTFISHING BY YOU AND MEMBERS OF YOUR HOUSEHOLD

12. a) Did you or any member of your household make any major purchase or investment in British Columbia in 1985 relating in whole or in part to go FRESHWATER sportfishing? (eg. boats, motors, 4 x 4's, cabins, camping gear, trailers, etc.)

Yes 1 O→ go to Question 12b) No 2 O→ go to Question 13

b) For each expenditure category, please indicate the amount of money spent in British Columbia in 1985 by you or members of your household and estimate the percentage of the amount you feel can be attributed to FRESHWATER sportfishing.

Expenditure Category	Total Amount of Purchases	Percentage Attributable to Sportfishing
Fishing equipment (rods, reels, fisn finder, etc.)	$ _____.00	_____ %
Boating equipment (boat, motor, trailer, etc.)	$ _____.00	_____ %
Camping equipment (tents, camper trailers, etc.)	$ _____.00	_____ %
Special vehicles (4 x 4's, snowmobiles, camper truck, ATV's, etc.)	$ _____.00	_____ %
Land-buildings (cabins, cottages, land, etc.)	$ _____.00	_____ %
Other (special clothing, waders, etc.)	$ _____.00	_____ %

13. Please estimate as best you can the present market value of the sportfishing gear and equipment owned and used by you and members of your household *solely* for sportfishing.

Fishing equipment (rods, reels, fish finder, etc.) $ _____.00

Boating equipment (boat, motor, trailer, etc.) $ _____.00

Camping equipment (tents, camper trailers, etc.) $ _____.00

Other $ _____.00

14. a) Did you or members of your household purchase any "package" or so-called all-inclusive sport fishing trips, tours or outings in 1985 to fish in British Columbia FRESH WATER (for example, going to fly-in fishing camps or lodges, going on guide or charter boats, etc. where the price includes a wide range of services such as lodging, food, transportation, tackle, etc.)?

Yes 1 O→ go to Question 14b) No 2 O→ go to Question 15

b) For each type of package, please provide the requested information.

Package	Management Region Number (from map)	Total Number of Anglers from Your Household	Total Cost to You and Your Household
Fly-in	_____	_____	$_____.00
Lodge	_____	_____	$_____.00
Charterboat	_____	_____	$_____.00
Other	_____	_____	$_____.00

. Excluding expenditures provided in Questions 12 and 14, please estimate as best you can, the amount of money you or other members of your household spent on the following to go FRESHWATER sportfishing in British Columbia in 1985:

	(√)	
Accommodation (hotels, motels, etc.)	None O	$ ← .00
Campsite fees (private, provincial, parks, etc.)	None O	$ .00
Food - groceries	None O	$ .00
- restaurant meals	None O	$ .00
- alcoholic beverages	None O	$ .00
Travel costs within British Columbia (gas, oil, fares, repairs, etc. for sportfishing trips)	None O	$ .00
Boat rentals	None O	$ .00
Household owned boat costs (gas, oil, moorage, etc.)	None O	$ .00
Fishing supplies (bait, tackle, line, etc.)	None O	$ .00
Guides	None O	$ .00
Fishing licence fees	None O	$ .00
Other (park fees, tolls, etc.)	None O	$ .00

If you did not personally fish for sport in British Columbia FRESH WATER in 1985, please go to Question 17.

. If your fishing costs had been higher in British Columbia in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?

$1.00 per day 1 O	$4.00 per day 4 O	$10.00 per day 7 O	$40.00 per day 10 O
$2.00 per day 2 O	$5.00 per day 5 O	$20.00 per day 8 O	$50.00 per day 11 O
$3.00 per day 3 O	$7.50 per day 6 O	$30.00 per day 9 O	$100.00 per day 12 O

RESPONDENT AND HOUSEHOLD SPORTFISHING PROFILE

n order for us to analyze the information collected in this survey in a meaningful way, we require some information on you nd your household. This information will allow us to most accurately estimate the number of active anglers in the province, heir use of the resource and the economic benefits generated within the province of British Columbia.

YOUR ANSWERS ARE STRICTLY CONFIDENTIAL

. a) How old are you? _____ years of age.

b) Are you: Male 1 O Female 2 O

Excluding yourself, how many members of your household 16 years of age and over held the following licences to fish in British Columbia FRESH WATER in 1985?

Licence Type	Number
Season	_____
6-day	_____
65 years of age and over	_____

How many members of your household under 16 years of age fished for sport in British Columbia FRESH WATER in 1985?

_____

a) Did you personally hold a licence to fish in British Columbia TIDAL WATERS in 1985?

Yes 1 O→ go to Question 20b) No 2 O→ please go to COMMENTS

b) If yes, how many days did you fish in British Columbia TIDAL WATERS in 1985?

_____ days

YOUR COMMENTS AND OPINIONS

You are invited to comment below about your fishing experiences and fishing opportunities in British Columbia FRESH WATER (for example, quality, costs, environment, access, hospitality, enforcement, services, accommodation, regulations, problems, etc.)

THANK YOU FOR YOUR COOPERATION AND ASSISTANCE

APPENDIX C
NONRESIDENT ANGLER QUESTIONNAIRE

1985 SURVEY OF SPORTFISHING IN CANADA

NONRESIDENTS OF BRITISH COLUMBIA

FRESHWATER SPORTFISHING

Dear Angler:

The 1985 Survey of Sportfishing in Canada is the third in a series of surveys conducted every five years as a cooperative effort by all federal, provincial and territorial fisheries management agencies. The results of this survey will provide fisheries managers in British Columbia with valuable information about fishing activity, catch rates, expenditure patterns and other important management planning data. The survey also provides you with the opportunity to state your personal preferences and opinions as well as to provide comments on fisheries issues which are important to you. This questionnaire covers British Columbia FRESH WATER only.

Of the thousands of people who fished in British Columbia FRESH WATER in 1985, only a small number have been chosen to receive this questionnaire. Your response is critical to the accuracy of the information which will be used by fisheries managers for developing policies and programs to safeguard fisheries resources for the future.

Please take a few minutes of your time to complete the questionnaire so that everyone will benefit from good management planning. Even if you did not fish or fished only a little, your answers are still very important.

THANK YOU IN ADVANCE FOR YOUR COOPERATION AND ASSISTANCE.

CONFIDENTIAL WHEN COMPLETED

1. a) Did you personally fish for sport in British Columbia FRESH WATER in 1985?

   Yes ₁○→ go to Question 2.
   No ₂○→ complete b) and go to Question 6.

   b) If you did not fish, what was your main reason?

   _____

   _____

Canada

YOUR PERSONAL SPORTFISHING ACTIVITIES

2. a) Please indicate the number of days you spent fishing for sport in FRESH WATER in British Columbia in each month of 1985. A "day" is all or any part of a day fished.

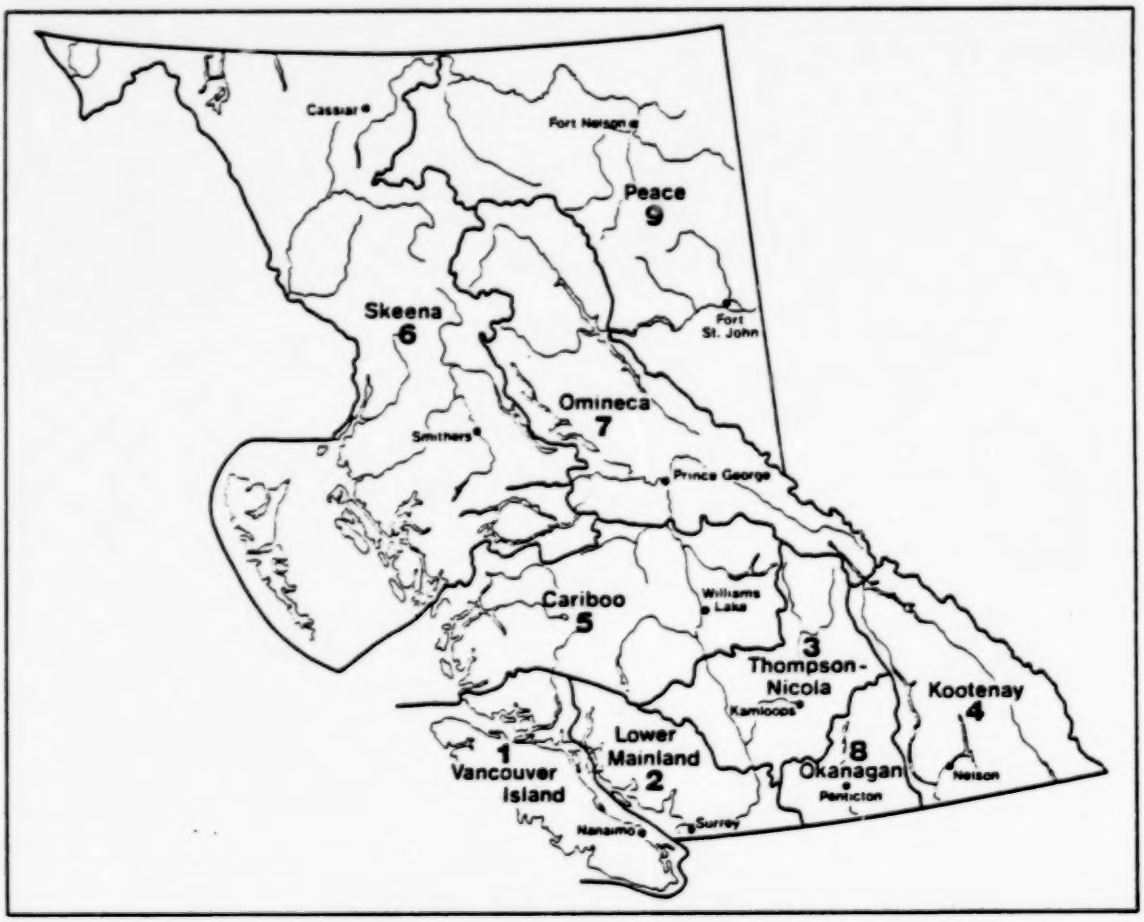
January - March	_____	May	_____	July	_____	September	_____
April	_____	June	_____	August	_____	October - December	_____

b) Of the above days, how many were spent fishing through the ice for sport in British Columbia FRESH WATER in 1985?

None ○ or ____ days

c) Of the total days you fished, how many were single day trips?

_____ trips



3. For 1985, we want to assess the fishing pressure on the lakes and rivers of the above fisheries regions. For those regions in which you fished, please indicate the number of days *you* devoted to fishing on lakes and on rivers or streams in 1985.

	Number of Days Fished			Number of Days Fished	
	Lakes	Rivers/Streams		Lakes	Rivers/Streams
Region 1	____	_____	Region 6	____	_____
Region 2	____	_____	Region 7	____	_____
Region 3	____	_____	Region 8	____	_____
Region 4	____	_____	Region 9	____	_____
Region 5	____	_____			

4. For each region in which you caught FRESHWATER fish species in British Columbia in 1985, please tell us the total number of fish you caught and the total number of fish you kept. Please report your personal catch only.

(IF YOU CAUGHT NO FISH IN 1985, PLEASE CHECK (√) ₂O AND GO TO QUESTION 6).

	REGION 1		REGION 2		REGION 3		REGION 4		REGION 5		REGION 6		REGION 7		REGION 8		REGION 9	
	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
1. Rainbow trout																		
2. Cutthroat trout																		
3. Kokanee																		
4. Dolly Varden char																		
5. Other Char (Eastern Brook trout, Lake trout)																		
6. Other trout																		
7. Salmon (freshwater)																		
8. Northern pike																		
9. Walleye (pickerel)																		
10. Perch																		
11. Arctic grayling																		
12. Other fish																		

5. a) What was the total estimated weight of the fish you caught and kept in British Columbia FRESH WATER in 1985?

_____ pounds or _____ kilograms

b) Of the fish you kept, approximately what percentage was:

eaten by yourself or within your household? _____ %

given to others? _____ %

Of the FRESHWATER species available in British Columbia, which three do you prefer to fish for?

First _____ Second _____ Third _____

How important is each of the following factors to your enjoyment of a day of sportfishing?

Factor	Very Important	Important	Not Important
Privacy from other fishing parties	1 O	2 O	3 O
Number of fish caught	1 O	2 O	3 O
Natural beauty of surroundings	1 O	2 O	3 O
Weather conditions	1 O	2 O	3 O
Size of fish caught	1 O	2 O	3 O
Escape from work or household routine	1 O	2 O	3 O
Your catch as a source of food	1 O	2 O	3 O
Quality of water	1 O	2 O	3 O
Angling for wild (not hatchery) fish	1 O	2 O	3 O
Access to wilderness areas	1 O	2 O	3 O
Catching the species desired	1 O	2 O	3 O

OTHER FISHING INFORMATION

8. How would you rate fishing in British Columbia FRESH WATER in 1985?

   Excellent 1 O Very Good 2 O Good 3 O

   Fair 4 O Poor 5 O

9. Do you intend to fish in British Columbia FRESH WATER in the future?

   Yes 1 O No 2 O

10. If there had been no fishing opportunities in British Columbia FRESH WATER in 1985, would you have:

    Stayed a shorter time 1 O
    Substituted other activities 2 O
    Not come at all 3 O

11. a) Did you fish for sport outside of British Columbia in 1985?

    Yes → O go to Question 11b)
    No → O go to Question 12

    b) How many days did you spend fishing in areas outside of British Columbia in 1985?

	Number of Days
Other Canadian provinces/territories	____
United States	____
Other Countries	____

TRIP INFORMATION

12. a) How many trips did you make to British Columbia in 1985? (a trip should be counted each time you crossed the border into the province) ____ trips

    b) How many days in total did you spend in British Columbia in 1985 for all reasons? ____ days

13. a) On how many of your trips to British Columbia in 1985 did you fish? ____ trips

    b) For how many of these trips was fishing:

	No. of Trips
Your main reason for visiting British Columbia	____
A secondary reason	____
Decided upon after arrival	____

14. What type of accommodation did you use on your fishing trips to British Columbia in 1985?

Type of Accommodation		Number of Nights in British Columbia
Day trips only	____ days	xxxxxxxx
Friends and relatives		____
Tent or trailer		____
Cottages owned by household		____
Provincial parks		____
Crown land camping		____
Commercial camping/trailer parks		____
Fishing lodge/camps		____
Other commercial lodging (hotel, motel, rental cottage)		____
Other (please specify)		
_____		____

EXPENDITURES ON SPORTFISHING BY YOU AND MEMBERS OF YOUR HOUSEHOLD

The following questions pertain to your household group.
DEFINITION OF HOUSEHOLD: All of those persons living in the same dwelling. Do not include any expenditures made by anglers in your travelling party who had a different residence from you.

CURRENCY:

Which of the following types of currency will you be using to answer the following questions?

U.S. Dollars 1 ○ Canadian Dollars 2 ○

15. a) Did you or any member of your household make any major purchase or investment in British Columbia in 1985 relating in whole or in part to FRESHWATER sportfishing? (eg. boats, motors, 4 × 4's, cabins, camping gear, trailers, etc.)

Yes 1 ○→ go to Question 15b) No 2 ○→ go to Question 16

b) For each expenditure category, please indicate the amount of money spent in British Columbia in 1985 by you or members of your household and estimate the percentage of the amount you feel can be attributed to FRESHWATER sportfishing.

Expenditure Category	Total Amount of Purchases	Percentage Attributable to Sportfishing
Fishing equipment (rods, reels, fish finder, etc.)	$ _____.00	_____ %
Boating equipment (boat, motor, trailer, etc.)	$ _____.00	_____ %
Camping equipment (tents, camper trailers, etc.)	$ _____.00	_____ %
Special vehicles (4 × 4's, snowmobiles, camper truck, ATV's, etc.)	$ _____.00	_____ %
Land-buildings (cabins, cottages, land, etc.)	$ _____.00	_____ %
Other (special clothing, waders, etc.)	$ _____.00	_____ %

16. a) Did you or members of your household purchase any "package" or so-called all-inclusive sport fishing trips, tours or outings in 1985 to fish in British Columbia FRESH WATER (for example, going to fly-in fishing camps or lodges, going on guide or charter boats, etc. where the price includes a wide range of services such as lodging, food, transportation, tackle, etc.)?

Yes 1 ○→ go to Question 16b) No 2 ○→ go to Question 17

b) For each type of package, please provide the requested information.

Package	Management Region Number (from map)	Total Number of Anglers from Your Household	Total Cost to You and Your Household
Fly-in	_____	_____	$ _____.00
Lodge	_____	_____	$ _____.00
Charterboat	_____	_____	$ _____.00
Other	_____	_____	$ _____.00

17. Excluding expenditures provided in Questions 15 and 16, please estimate as best you can, the amount of money you or other members of your household spent on the following to go FRESHWATER sportfishing in British Columbia in 1985:

	(√)	
Accommodation (hotels, motels, etc.)	None O	$_____.00
Campsite fees (private, provincial, parks, etc.)	None O	$_____.00
Food - groceries	None O	$_____.00
- restaurant meals	None O	$_____.00
- alcoholic beverages	None O	$_____.00
Travel costs within British Columbia (gas, oil, fares, repairs, etc. for sportfishing trips)	None O	$_____.00
Boat rentals	None O	$_____.00
Household owned boat costs (gas, oil, moorage, etc.)	None O	$_____.00
Fishing supplies (bait, tackle, line, etc.)	None O	$_____.00
Guides	None O	$_____.00
Fishing licence fees	None O	$_____.00
Other (park fees, tolls, etc.)	None O	$_____.00

If you did not personally fish for sport in British Columbia FRESH WATER in 1985, please go to Question 19.

18. If your fishing costs had been higher in British Columbia in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?

$1.00 per day 1 O	$4.00 per day 4 O	$10.00 per day 7 O	$40.00 per day 10 O
$2.00 per day 2 O	$5.00 per day 5 O	$20.00 per day 8 O	$50.00 per day 11 O
$3.00 per day 3 O	$7.50 per day 6 O	$30.00 per day 9 O	$100.00 per day 12 O

RESPONDENT AND HOUSEHOLD SPORTFISHING PROFILE

In order for us to analyze the information collected in this survey in a meaningful way, we require some information on you and your household. This information will allow us to most accurately estimate the number of active anglers in the province, their use of the resource and the economic benefits generated within the province of British Columbia.

YOUR ANSWERS ARE STRICTLY CONFIDENTIAL

19. a) How old are you? _____ years of age.

b) Are you: Male 1 O Female 2 O

20. a) How many members of your household under the age of 16 fished for sport in British Columbia FRESH WATER in 1985?

_____ (if none, go to Question 21)

b) For those household members indicated above, how many days in total did they fish in British Columbia FRESH WATER in 1985?

_____ days

21. Excluding yourself, how many members of your household 16 years of age and over held the following licences to fish in British Columbia FRESH WATER in 1985?

Licence Type	Number
Season	_____
6-day	_____

22. a) Did you personally hold a licence to fish in British Columbia TIDAL WATERS in 1985?

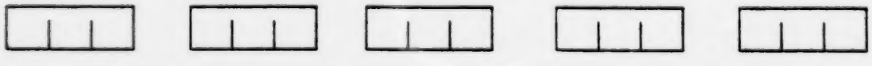
Yes 1 O→ go to question 22b) No 2 O→ please go to COMMENTS

b) If yes, how many days did you fish in British Columbia TIDAL WATERS in 1985?

_____ days

YOUR COMMENTS AND OPINIONS

You are invited to comment below about your fishing experiences and fishing opportunities in British Columbia FRESH WATER (for example, quality, costs, environment, access, hospitality, enforcement, services, accommodation, regulations, problems, etc.)



THANK YOU FOR YOUR COOPERATION AND ASSISTANCE

APPENDIX D
ANGLER COMMENTS

Anglers were invited, at the end of the questionnaire, to include any comments they might have on their fishing experience and opportunities in British Columbia's fresh water. A total of 1,877 residents and 596 non-residents provided comments which are summarized below. The comments have been grouped into six broad categories, each containing a number of sub-categories.

COMMENT	NUMBER OF RESIDENTS	NUMBER OF NONRESIDENTS
Quality of the Fishery		
Fishing better than previous years	3	
Fishing worse than previous years	10	3
Catch poor this year	14	1
No catch this year	5	3
Fishing general - positive	334	169
Fishing general - negative	44	46
Fishing general - improving	7	2
Fishing general - declining	129	20
Trout fishing - improving	4	1
Trout fishing - declining	14	3
Fish size smaller	55	22
Species caught not desirable	14	1
Fishing sites crowded	34	6
Will not return due to poor fishing	4	1
Fished little	47	
Did not fish	1	
No fishing due to health	2	
Fisheries Management		
Management general - satisfaction	72	10
Management general - dissatisfaction	40	3
Management poor	4	1
Conservation Officers - positive	48	13
Conservation Officers - negative	6	2
Conservation Officers - not enough	151	2
Increase enforcement and inspection	307	13
Increase funding for management	27	1
Decrease funding for management	2	
Longer seasons	10	
Shorter seasons	17	2
Licence regulations - positive	24	5
Licence regulations - negative	159	20
Regulations general - positive	33	10
Regulations general - negative	101	6
Regulations too complex	67	25
Overfishing evident	69	8
Poaching evident	63	3

COMMENT	NUMBER OF RESIDENTS	NUMBER OF NONRESIDENTS
Fisheries Management (Cont'd)		
Increase stocks	250	15
Too many boats	8	1
Restrict motor boats	67	3
Restrict access to area	36	4
Limit Foreign anglers	42	
Raise limits		
Close restocked area	11	2
Keep large salmon	1	
Availability of term licences	3	2
Commercial fishing restrictions	13	1
Stop commercial fishing	5	3
Do not like licences	3	2
Too many cottages	2	
Need more boat ramps	35	2
Native fishing - negative	42	1
Diseases in fish	4	
Licence Fees to Management	23	
Quality of Environment		
Too much algae/weeds	19	2
Cleanliness - positive	27	28
Cleanliness - negative	27	1
General environment concerns	92	8
Acid rain concerns	3	
Water clean	18	3
Water dirty	10	1
Sewage problems	6	1
Low water levels	5	1
High water levels	1	
Water contaminants	16	1
Logging operations	89	13
Hydroelectric developments	8	1
Water quality - positive	7	1
Water quality - negative	27	4
Enjoyment of Trips		
Canada positive	1	34
B.C. positive	37	73
Trip general - positive	5	97
Trip general - negative		2
Customs - positive		1
Customs - negative		1
Return in future	2	116
Canada/U.S. exchange rate - positive		2
Canada/U.S. exchange rate - negative		1
Camp services - positive	37	8
Camp services - negative	22	4

COMMENT	NUMBER OF RESIDENTS	NUMBER OF NONRESIDENTS
Enjoyment of Trips (Cont'd)		
Fishing information - positive	3	1
Fishing information - negative	59	16
Tourist information - positive	1	1
Roads and highways - positive	9	7
Roads and highways - negative	35	14
Site access - positive	68	14
Site access - negative	86	13
Campsites - positive	81	28
Campsites - negative	30	7
Equipment - positive	6	3
Equipment - negative	13	1
Access - positive	2	
Access - negative	17	1
Dislike guides		
Vandalism or too trashy	18	
Costs of Fishing		
Too costly - general	161	25
Gas too costly	68	25
Lodging too costly	10	7
Licences too costly	60	35
Costs reasonable	61	30
No return due to costs	1	
Fished less due to costs	28	
Comments on the Survey		
Survey useful	7	1
Survey wasteful	12	2
Survey suggestions	22	1
Reply requested	38	8
Copy of results	4	1

List of previous Fisheries Technical Circulars

1986 70 Dixon, B.M. Age, Growth, and Migration of White Sturgeon in the Nechako and Upper Fraser Rivers of B.C.

1986 71 Billings, S.J. Steelhead Harvest Analysis, 1984-85.

1986 72 Carswell, L.B., R.S. Hooton and V.A. Lewynsky. Campbell/Quinsam River Creel Surveys, 1975-76 to 1979-80.

1986 73 Clark, B.J. and A.R. Facchin. The 1984 Chilliwack-Vedder River Steelhead Creel Survey.

1986 74 Lirette, M.G., R.S. Hooton and V.A. Lewynsky. Preliminary Steelhead Production Capability Estimates for Selected Vancouver Island Streams.

1986 75 Tsumura, K. and J.M.B. Hume. A Comparison of Precociousness in Three Graded Size Classes of Hatchery-Reared Rainbow Trout (Salmo gairdneri).

1987 76 Billings, S.J. Steelhead Harvest Analysis, 1985-86.

1987 77 Hooton, R.S., B.R. Ward, V.A. Lewynsky, M.G. Lirette, and A.R. Facchin. Age and Growth of Steelhead in Vancouver Island Populations.

1987 78 Ashley, K. Artificial Circulation in British Columbia: Review and Evaluation.

List of previous Management Reports

1985 84 Hooton, R.S. A Questionnaire Survey of Vancouver Island Steelhead Anglers' Opinions and Preferences on Management Issues.

1985 85 Hooton, R.S. and V.A. Lewynsky. Big Qualicum River Steelhead Fishery Investigations, 1976 to 1981.

1986 86 Hooton, R.S. & M.G. Lirette. Telemetric Studies of Winter Steelhead, Gold River, 1982-83.

1986 87 Parkinson, E.A. Skaha Hatchery Evaluation.

1987 88 Tsumura, K., J.M.B. Hume and B.M. Chan. Effects of Size at Release in Rainbow Trout (Salmo gairdneri) Stocked in a Winterkill Lake.

1986 89 Slaney, P.A. An Assessment of the Rainbow Trout (Salmo gairdneri) Population in the Upper Nechako River and the Effects of a Sportfishery Closure.